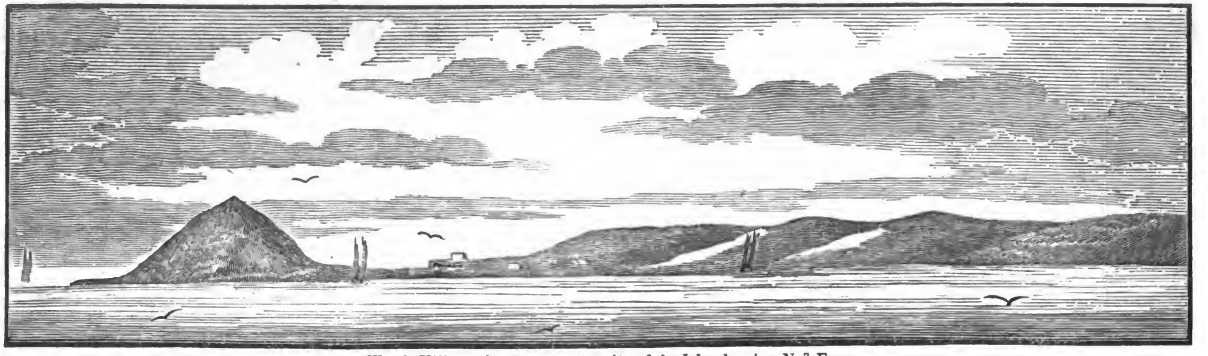
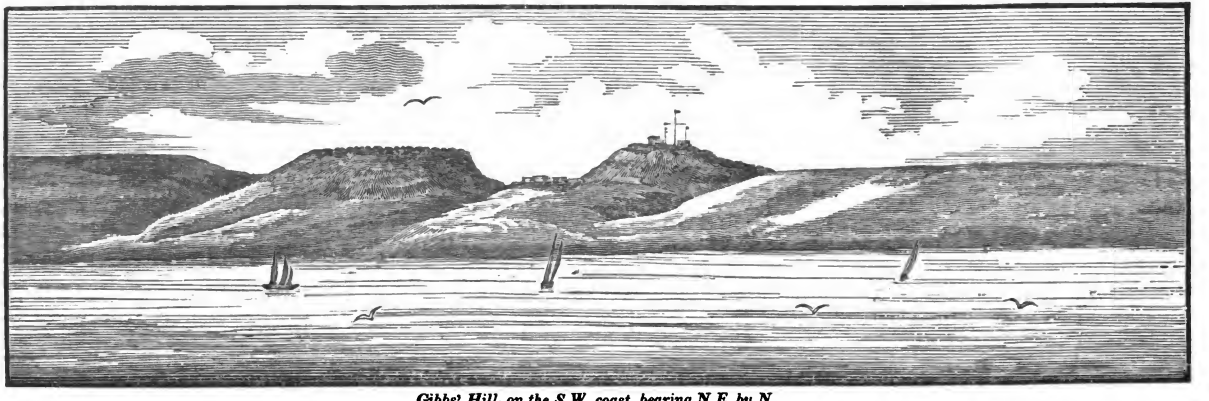


Wreck Hill, on the western extremity of the Isles, bearing N. ¾ E.



Gibbs' Hill, on the S.W. coast, bearing N.E. by N.

THE

COLOMBIAN NAVIGATOR;

OR

SAILING DIRECTORY

FOR THE

AMERICAN COASTS

AND

The West-Indies.

VOLUME THE FIRST.

COMPREHENDING,

1.—The Florida or Gulf-Stream, and Bermudas' Islands.

2.—The Coasts and Harbours of Nova-Scotia, of the Bay of Fundy, and the United States, from Sable Island and Halifax to Cape Florida.

3.—The Mexican Sea, or Gulf of Mexico, from the N.E. point of Yucatan to Campeché, Vera-Cruz, Tampico, the Missisipi, Mobile, Pensacola, and the Sable Point of Florida; together with the Martyrs, or Florida Kays and Reefs.

TO THE DIRECTORY ARE PREFIXED,

1.—General Table of the Positions, or of the Latitudes and Longitudes, of the Principal Points, &c., with Notes on the same.

2.—The Pharonology, or Description of all the Light-towers, Light-vessels, and other Remarkable Objects, for distinguishing Head-lands, &c.

COMPOSED,

DIGESTED, AND ARRANGED, FROM MANY VALUABLE DOCUMENTS AND SURVEYS, ESPECIALLY THOSE OF CAPT. ANDR. LIVINGSTON, OF THE SPANISH NAVIGATORS, AND THE AMERICAN PILOTS; OF MESSRS. DES BARRES, HOLLAND, LOCKWOOD, WALKER, GAULD, ROMANS, DE MAYNE, MONTEATH, AND OF ADMIRAL MACKELLAR, LIEUT. JOHN EVANS, MR. EDW. DUNSTERVILLE, &c.

By JOHN PURDY, Hydrographer.

IMPROVED, BY CONSIDERABLE ADDITIONS, TO THE PRESENT TIME.

LONDON:

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Chart-seller to the Admiralty, the Honorable Corporation of Trinity-House, &c.

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[Entered at Stationers' Hall.]

ERRATA.

Page 3, line 23, for West, read E.S.E.; and in the next line for East, read N.N.W.
38, *Gannet Light*, the word *red* to be erased, as shown in page xli.
42, *Light on Mount Desert Rock*, to be corrected as shown in page xliii.
85, line 7, for *and the*, read *and in the*.
118, Bar of the New Inlet of Pamtico to be lat. 35° 37′, long. 75° 26′, as noticed in page xxiv.
144, line 29, for *in*, read *it*.
197, line 7, for *country*, read *county*.

PRINTED BY J. RIDER, 14, BARTHOLOMEW CLOSE, LONDON.

PREFACE.

A COLLECTION of Sailing Directions, under the title of '*The Columbian Navigator,*' was published, some years ago, by the Proprietor of the present Work.—That collection contained particular directions for all the North-American Coast, from Halifax, southward, and for the Coasts and Islands of the West-Indies, &c., and was corrected to the time of publication, according to the best attainable documents; but it was necessarily very imperfect, from the want of much knowledge which has since been derived from various sources. Upon a critical examination of the work, preparatory to a new edition, it was found that every page was susceptible of some correction, or addition, or improvement in arrangement;—that many extensive portions of coast remained altogether unnoticed;—that others were very imperfectly described;—and that some particulars were totally incorrect. The latter has been ascertained by the recent acquisition of a large quantity of valuable information, much of which has not hitherto appeared before the Public.

The assistance of several intelligent friends enables us, at length, to present another work, nearly under the same title, which will be found much more accurate and complete than the former; and, with truth, we may say, than any other, of a similar description, which has hitherto appeared. So essentially different is it from the Columbian* Navigator, that it may be strictly considered as a New Work; and, as such, we submit it to future correction; being sensible, after all our care, that it is not perfect.

To those liberal friends and correspondents whose original communications have enriched our pages, we return our grateful acknow-

* "The proper name of him whom we call Columbus, was, in Italian, *Cristoforo Colombo;* given in Spanish as *Christoval Colon;* in French, *Christophe Colombe.* It has been latinized into Columbus; but the *u*," says a learned and ingenious friend, "is a barbarism, neither consonant with the genius of the language, nor with the fact as to the name." The birth place of Colombo was *Coguretto,* a maritime village on the coast, about four leagues westward from Genoa; the same which is represented as Cogoletto and Cocolata. Here this illustrious man was born, in or subsequent to 1442, and he died at Valladolid, in Spain, in 1506, where a tomb, erected to his memory, was inscribed, *A Castillo y a Leon Nuevo Mundo dio Colon.* "To Castile and Leon Colon has given a new World."

ledgements;

ledgements: not for ourselves alone, but in the name of the MARINERS OF ALL NATIONS, who will enjoy the fruits of their labour.

To Captain Livingston, we have acknowledged our obligations in a former work:* and we shall, therefore, only add here, that, by means of his manuscript-translation of the '*Derrotero de las Antillas*,' with his own notes and important additions, we have been enabled to give a complete description of the Mexican Sea, and its navigation in the different seasons, as well as of the Coasts of Cuba, Hayti, &c. The deficiencies and occasional inaccuracies of the Derrotero have, also, in some material particulars, been supplied from the journals of Admiral Mackellar, Lieut. John Evans, Mr. Edw. Dunsterville, and other Gentlemen whose names appear hereafter.

Finally, we have anxiously and perseveringly endeavoured to render this work a FAITHFUL GUIDE to the Mariner. On perusal, he will find that it contains a description of every coast, and directions for every harbour, a few only excepted, for which pilots are indispensible. These have been corrected agreeably to the present improved state of the Lighthouses, &c. The following Table shows the Contents of the first volume; the second comprises the GREAT ANTILLAS, or PORTO-RICO, HAYTI, JAMAICA, and CUBA; the GULF and WINDWARD PASSAGES: and particularly the navigation of the GULF-STREAM. The third volume comprehends the VIRGIN and CARIBBEE ISLANDS, all the Coast of GUYANA, of COLOMBIA, and the MOSQUITO SHORE, HONDURAS, &c., to Cape Catoche; thus the three volumes comprehend the *whole of the West Indies*, &c.: but each is sold separately, for the convenience of those purchasers who may not require the whole work.

Since the publication of former Editions, we have derived satisfaction from seeing our labours approved, both abroad and at home. Approbation has been amply, though *tacitly*, expressed in a re-print of many portions of this work, with our others, both in England and America: and they have, therefore, thus proved the more extensively useful, and contributive to the purposes for which they were designed.

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* *Memoir and Directions to accompany the Chart of the Atlantic Ocean.*

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Communications on the Ports of Galveston and St. Luis, some Banks in the Mexican Sea, Salt Kay Bank, Bahamas, and St. Helena Sound in Carolina; 1840.

[Colombian Navigator, Vol. I. 1839.]

1.—Directions for proceeding to Galveston Bay, by Mr. W. C. Mitchell, Commander of the *Ironside*, of Liverpool, and Mr. Geo. Simpson, chief Pilot, of Galveston, 1840.

The east end of the Island of Galveston lies in 29° 16′ 37″ N., and 94° 49′ 41″ W.* This has been deduced from numerous observations, as shown by Mr. Simpson.† The rise and fall of the tide on the bar is only from 2 to 3 feet. Variation of the compass, 9° E.

Vessels bound to this place, says Captain Mitchell, should endeavour to make the land about the Sabine River, or the meridian of 94° W. They may stand toward the land with the greatest confidence, always keeping the lead going; as there are 3½ to 4 fathoms of water at 5 to 6 miles off the land to the eastward of Galveston Island; but, to the westward of the east end of that island they should never stand within the depth of 5½ fathoms. The current always sets strongly to the S.W. at the rate of 2 to 2½ miles in the hour, and the prevailing winds are from S.E. excepting during the winter months, when there are very heavy gales from North to N.W. With the latter, if you are any where near the land, or in 6 or 7 fathoms, it will be much better to anchor than to keep under way, provided you are near the port.

On approaching Galveston Bay the first objects seen will be the masts of vessels, and a little while after the houses will appear. The land may not be seen until about two miles from the anchorage without the bar.

The best anchorage off the Bar is in 5½ to 6 fathoms, (mud,) about one mile off, with the flagstaff on Galveston Island bearing W. by S., and the pilot's house, which is the largest house on Bolivar Point (north shore) ‡ N.W. by W. The ground is good, and, with good ground tackle, there is no risk of driving. Within the bay vessels are quite sheltered from all winds, and have good holding ground.

At about 12 miles to the N.E. of the entrance of the port is a long range of bushes called *Pepper Grove*, and if you see these you may make sure that you are to windward of your port. To the westward of the port, near the centre of Galveston Island, are the three trees, mentioned in page xxxi, and which may be seen, in clear weather, from three to four leagues off. They are the only original trees on the island.

Mariners ought to be very careful, when standing in for the land to the westward of Galveston Bay, during the night, as the soundings are very irregular; but in the day-time there is no danger, while keeping the lead going. §

Mr. Simpson has observed that the port of Galveston was formerly difficult to make, the coast being so low; but there are now more than 3000 houses, and many so lofty that they may be seen, from a vessel's mast-head, at the distance of 20 miles. Vessels of heavy draught should not approach the Bar nearer than in six fathoms, and then, by making signal for a pilot they will be promptly attended to. Those making the port by night will

---

* Captain Mitchell has given it in lat. 29° 18′, and long. 94° 48″.

† Mr. Simpson's Remarks were first given in the Nautical Magazine, June, 1840.

‡ See the description, page xxxi, hereafter.

§ Captain Mitchell says, I took observations, when lying at anchor, which gave 29° 16′ N. and 94° 44′ W. When I left, there was a pair of sheers erected over the wreck of the steamer *Cuba*, on the north breakers, inside the Bar, and on the south breakers lay the wreck of the ship *Virginia*. No vessel but of very easy draft should attempt to cross the Bar. My vessel drew 8½ feet going and coming, fully laden, and a vessel of the same draught, or a foot more, may always cross the Bar in safety. The Virginia was said to draw 12 feet, and, in attempting to cross, became a total wreck.
There is now a first-rate pilot-boat constantly on look-out for vessels nearing land; and it is expected that a light-vessel may be stationed as a direction for the Bar.

do well to come to an anchor until day-light. For the convenience of obtaining a pilot, those drawing 8 feet or less may approach to the depth of 4 fathoms.

If, on approaching from the eastward, the town comes in sight and a little to the southward of W.S.W., haul off immediately to 6 fathoms, and until it bears S.W. by W. when you will then be in a fair-way for the Bar. If approaching from the *westward*, run to the eastward until the town has the same bearing of S.W. by W.

2.—SAN LUIS, or the WEST PASS of GALVESTON.

The following description and directions for this port were obligingly communicated by Mr. John Nabb, agent to the Charleston Insurance and Trust Company for Texas, and dated San Luis, Jan. 1st, 1840.

The little isle of SAN LUIS, containing 354 acres, is situate at a mile and a half from the western end of Galveston Island. A town upon it is rising very fast. The Bar is only two miles from the island, and the port has the best water known on the coast of Texas. The harbour is good, capacious,' and of easy access, and is expected, from its peculiar advantages, to become the chief commercial port of the new republic.

Those bound to San Luis should endeavour to make Galveston Island, which may be known by the three trees in the middle of the island as above mentioned. Then run down along shore in 5, 4, or 3, fathoms, soundings regular, and thence to 5 fathoms. Keep in the last depth, steering S.W. until you bring a beacon on San Luis in a line with the building known as Polites House, bearing W.N.W.; with this mark on run for it, which will lead you in over the bar, in ten feet at low water, until you come within half a mile of San Luis Island; then haul up N.W. gradually opening Polites House to the northward of the beacon, rounding a buoy, close on board, which is placed on the shoal that stretches from Galveston Island, leaving it on the starboard side, and after passing which you may anchor at pleasure.

A flag half-mast on the beacon will indicate 10 feet on the bar; one ball, 11 feet; two balls, 12 feet; three balls, 13 feet; four balls, 14 feet; five balls, 15 feet; and the flag hoisted to the mast-head or flagstaff, will indicate high water. Spring-tides rise 5 feet, and neaps 3 feet.

3.—BANKS on the NORTH SIDE of the MEXICAN SEA; from the communication of Captain Mitchell.

At 45 miles E.S.E. from Galveston Bar is the centre of a bank, having very uneven ground, varying from 5 to 8, 10, 7½, and 5, fathoms. The south end in latitude 28° 56′, and the north end in 29° 10′.

In latitude 28° 50′, and longitude 91° 10′, is another shoal, called *Ship Island Bank*, extending about 15 miles west, with 5 and 6 fathoms on each side of it, and considered very dangerous.

There is also said to be a shoal, with only 6 feet of water on it, in latitude 28° 46′, and longitude 92° 4′, with the sea always breaking on it.

4.—STRAIT of FLORIDA and BAHAMAS.

In January, 1840, the British government established a lighthouse on the N.W. side of the Salt Kay bank, which stands on the highest of the Double-headed Shot Kays, in latitude (according to the official notice) 23° 56′ 28″, and longitude 80° 27′ 38″.

The base of the tower is 46 feet above high water; and the height of the tower is 54 feet. The light is fixed, and may be seen in all directions, except when bearing S.W. by W. ½ W. (magnetic) where at the distance of about nine miles, it will be intercepted by Water Kay.

From the lighthouse the south-westernmost of the Double-headed Shot Kays bears S.S.W. ½ W. (magnetic) distant 3½ miles.

The Florida Stream is generally found to set strongly to the N.E., within a mile and a half of the rocks; but, through the intervals of the kays, the ebb and flood tides run rapidly off and on the bank, where it is high water, on the full and change at 9 o'clock, and the tide rises from two to three feet.

The

The light, being 100 feet above the level of the sea, will be visible, in clear weather, to an eye elevated 10 feet, at the distance of 14 miles; 20 feet, at 15¼ miles; 40 feet, 17¼ miles; 80 feet, 20 miles.

NASSAU, New Providence.

The lantern and lights of the lighthouse on Hog Island, near Nassau, have been recently replaced by others, similar in construction to those on Abaco: the light, being 72 feet above the level of the sea, may now be visible, in clear weather, to an eye elevated 10 feet, at the distance of 12 miles; 20 feet, 13½ miles; and 40 feet, 15½ miles.

5.—St. HELENA SOUND, in South Carolina.

Mr. Nabb, the gentleman to whom we are indebted for the preceding directions for the port of San Luis, has stated to us that the description of St. Helena Sound, heretofore given in different books, is very erroneous. He has run several schooners from Charleston to the Combahee River, and having obtained a perfect knowledge of the Bar and Sound of St. Helena, is enabled to state that he can take a ship, drawing 16 feet, over the Bar at high water of common tides, and thence through the Sound, in a fine channel of 5 to 7 fathoms, thence up the Combahee River, fifty miles from the Bar, or into a good harbour, under Morgan's Hummocks, on St. Helena Island, or into a fine harbour under the south-west end of *Otter Island*, (an island omitted in every chart that he has seen,) and, instead of South Eddisto, Otter Island, with its shoals stretching outward, forms the northern boundary of the entrance to St. Helena Sound; and *Pine Island*, with the *Bird Kay*, and *Cow-pen Shoals*, (also omitted in all the charts,) forms the southern boundary of the entrance of South Eddisto River, which has 10 feet on the Bar at low water, and is an excellent harbour.

"*The sailing directions for St. Helena ship-bar* are as follows:—From 6 fathoms, off Charleston Bar, steer S.W. by compass until you make the Hunting Islands plain from the deck; then look a-head, and haul in until you open Beaufort gap; bring into the middle of this gap a square lump of trees, (Otter Island South Point N.W. by W.,) then run for this gap until you open a remarkable saddle in a high wood in the back land, a ship's length clear of Otter Island South Point; then haul up for Otter Island South Point, (which will bear N.W. by N.) and you will cross the bar in from 2 to 3 fathoms, according to the state of the tide: with this mark on, steer up for Otter Island until you nearly shut the east end of Pine Island behind the east end of Otter Island, say a ship's length, but be sure not to shut Pine Island entirely behind Otter Island; for at the instant that you shut the last tree on Pine Island behind Otter Island, you will bring up on Combahee Bank. With this mark on, Morgan's Hummocks will bear W.S.W.; steer for them, which will lead you up in a channel way between Combahee and Pelican Banks in 7 fathoms. Keep on for these Hummocks until you bring *True Blue gap* on the centre of *Marsh Island*, when you must steer for it, never bringing that gap to the southward of the centre, nor to the northward, of that island. When nearly up with Marsh Island, steer for the mouth of the Small Rice Creek, which will lead you in the channel way. Advance no nearer to the shore than in 2 to 3 fathoms, according to the draught of water, and when abreast of this creek steer for *Hangmans Point*, and pass it close on board, and you may anchor, being then in the mouth of Combahee River.

"There are two other channels into the Sound of 9 feet, much used by coasters, viz., the *Slew* and the *Cow-pen*, for which there are marks, which we use in the same way as above.

"I am aware that the public will be slow to believe, and I am, myself, astonished, that so gross an error in the description of this place could exist so long, particularly as St. Helena is situated between two large commercial cities, (Charleston and Savannah,) where vessels of every description are hourly passing, and property is conveyed by coasters, through this inlet, to these two markets."

To the preceding remarks by Mr. Nabb we may add, it is very discreditable to the naval administration of the United States that charts of this and other important harbours of the Federation, from actual surveys, have not yet appeared. The best charts of the coasts of Carolina, published in America, have been copied from those published in London more than half a century ago. Names have been successively changing, but the groundwork is nearly, if not altogether, the same.—J. P.

No. 53, Fleet Street, London, 20th July, 1840.

This day is published, in one thick volume, octavo, closely printed, illustrated with a Chart of Hurricanes, &c. Price 12*s.* in boards,

A New Edition, being the Eighth, of the MEMOIR, DESCRIPTIVE and EXPLANATORY, to accompany the Charts of the ATLANTIC OCEAN; and comprising Instructions, general and particular, for the navigation of that sea:

Also, TABLES of the Positions of all the principal points, with the Authorities, &c.; the Variations of the Compass, Descriptions of the Light-houses; of Winds, Tides, Currents, Passages, &c. With an APPENDIX on Ships' Reckonings, Latitude, Longitude, Chronometers, Meteorology, Marine Barometer, and Thermometer, and the subjects therewith connected.

I.—GENERAL TABLE OF THE POSITIONS, OR OF THE LATITUDES AND LONGITUDES, OF THE PRINCIPAL POINTS, LIGHTHOUSES, &c. DESCRIBED HEREAFTER; WITH THE PAGES ON WHICH THE RESPECTIVE DESCRIPTIONS MAY BE FOUND.

*** The Longitudes are from the Meridian of Greenwich.—The Figures in Parentheses, thus, [3.] refer to Notes subjoined to this Table.

	Latitude North.	Longitude West.	Page.
BERMUDAS.			
	° ′ ″	° ′ ″	
Wreck Hill ..... [1.]	32 15 20	64 50 0	8, 9
Gibbs' Hill; Signal Station	32 13 50	64 49 12	8, 9
Southern extremity of the Land	32 13 12	64 46 40	8
Castle Island	32 19 30	64 37 20	9
St. David's Head; the eastern extremity of land ..	32 21 25	64 35 40	8, 9
Catharine's or the North Point	32 23 0	64 37 15	10
Town of St. George; the centre	32 22 23	64 37 40	10, 11
Eastern extremity of the Reef	32 25 30	64 34 10	9
North Rock *(Above water)*	32 29 0	64 42 50	10
Ireland Island; North Point of	32 18 50	64 47 0	11
Mount Langton; Signal Station	32 17 0	64 44 18	8
[*Variation* 2¼ to 3° *West.*]			
NOVA SCOTIA, &c.			
Sable Island ..... [2.]			
The N.E. End	43 59 0	59 47 0	13, 15
The Southernmost Part	43 56 0	60 0 0	13
The West End	43 57 0	60 15 0	15
Halifax, Citadel Hill ..... [3.]	44 39 0	63 33 40	18
Sambro' Lighthouse, near Halifax Harbour [4.]	44 28 30	63 32 30	17
Jedore Head ..... [5.]	44 40 0	63 5 30	*Notes.*
Green Isle, Country Harbour	45 4 55	61 34 40	— —
Berry Head	45 10 57	61 20 10	— —
Cape Canso	45 18 10	60 58 20	— —
In the Gulf of St. Lawrence			
Shediac; entrance ..... [6.]	46 11 30	64 28 0	*Notes.*
Pictou Harbour; Lighthouse ..... [7.]	45 41 44	62 40 10	— —
Southern Coast, continued:			
Green Island, off Mahone Bay	44 27 0	63 58 30	23
Cross Island, off Lunenburg Harbour	44 23 0	64 5 10	24
Cape Le Have	44 15 0	64 17 0	24
Port Medway, South-West Head of	44 10 0	64 29 0	24
Coffin's Island Lightho. near Liverpool Harbour	44 5 0	64 35 0	25
Mouton or Matoon Island	43 57 0	64 42 0	25
Point Hebert	43 51 0	64 51 20	25
Shelburne or Cape Roseway Lighthouse .. [8.] ..	43 40 30	65 12 35	26
Cape Negro	43 32 0	65 17 0	27
Brasil Rock	43 24 15	65 22 0	28
Cape Sable ..... [9.]	43 24 0	65 35 30	28
Seal Island, South Point ..... [10.]	43 23 54	65 58 30	30
Gannet Rock	43 40 40	66 9 0	31

NOVA SCOTIA, &c.	Latitude North.	Longitude West.	Page.
SOUTHERN COAST, continued :—	° ′ ″	° ′ ″	
Cape Fourchu, near Yarmouth ....[11.]....	43 47 30	66 10 30	31
Lurcher Reef	43 49 0	66 28 0	31
Trinity Ledge	44 0 0	66 19 0	32
Cape St. Mary	44 5 0	66 14 0	32
Bryer's Island Lighthouse .....[12.]....	44 14 30	66 24 0	32
Point Prim Lightho. Entr. of Annapolis Basin	44 41 30	65 46 30	33
Cape Split, in the Mines Channel	45 21 40	64 14 0	33
Cape Chignecto	45 22 0	64 36 30	33
NEW BRUNSWICK.			
Fort Cumberland	45 49 0	64 8 30	34
Cape Enragée	45 36 0	64 28 0	34
Quako Ledge, Middle of.....[13.]....	45 17 0	65 10 0	34
Cape Spencer	45 12 0	65 53 30	34
Cape Maspeck .....[14.]....	45 12 40	65 58 45	34
Partridge Island Lighthouse, Entrance of St. John's	45 14 0	66 1 15	34
City of St. John	45 15 30	66 1 30	35
FREDERICTON, the Capital of New Brunswick	45 57 0	66 39 0	35
Point Lapreau; *Lighthouse*	45 4 0	66 25 0	37
Wolf Islands, N.E. Point	44 59 0	66 41 0	37
Beaver Harbour; S.W. Point	45 3 30	66 45 15	40
Bliss Island, at the Entrance of Etang	45 2 30	66 51 0	40
St. Andrew's, S.E. Point of Navy Island	45 3 30	67 5 0	40
Head Harbour Lighthouse, on Campo Bello	44 57 0	66 56 0	39
GRAND MANAN ISLAND, &c. .....[10.]....			
Northern Point	44 46 49	66 48 0	37
S.W. Head	44 35 30	66 54 0	37
White Head Island, N.E. Point	44 37 40	66 42 0	38
Old Proprietor Rock	44 31 40	66 34 0	38
Gannet Rock Lighthouse	44 31 0	66 49 0	38
FREDONIA, or UNITED STATES.			
Lighthouse on the West Head, Passamaquoddy	44 48 0	66 57 0	39
MACHIAS, Town of	44 51 0	67 23 0	43
Great Wass Island, S.E. Point	44 30 0	67 30 0	—
Petit or Little Manan Island; Lighthouse	44 24 0	67 46 0	44
Scoodic or Scuttock Point	44 20 0	67 57 0	44
Mount Desert Rock; Lighthouse	43 52 0	68 3 30	42
Isle Haute; the S.W. Point	44 1 0	68 30 0	45
Wooden Ball Rock	43 48 0	68 45 0	45
Isleboro', or Long Island; South End	44 14 0	68 48 0	45
CASTINE; the Town	44 24 0	68 40 0	45
White Head Lighthouse	43 59 0	68 58 0	45
Metinick Rock	43 52 0	68 59 0	46
Manheigin Island	43 44 0	69 11 0	46
Franklin's Island Lighthouse, near George's River	43 54 0	69 12 0	46
Penmaquid Point, John's Bay	43 49 0	69 25 0	46
Bantam Ledge	43 42 0	69 32 0	46
SEGWINE ISLAND *Lighthouse*, Entr. of Kennebec River	43 40 30	69 42 0	46
Pond Island Light	43 42 30	69 42 6	46
Cape Small Point	43 40 0	69 47 0	46
Alden's Ledge	43 29 0	70 2 0	48
Half-way Rock—Entrance of Casco Bay	43 37 0	70 0 0	48
Portland Lighthouse	43 36 30	70 10 0	49
Cape Elizabeth	43 34 0	70 9 0	48

UNITED STATES, CONTINUED.	Latitude North.	Longitude West.	Page.
	° ′ ″	° ′ ″	
Wood Island Lighthouse, in Saco Bay	43 27 0	70 17 30	49
Cape Porpoise	43 21 0	70 26 0	49
Wells Harbour, Entrance of	43 19 0	70 31 0	50
Agamenticus Hills	43 16 0	70 37 0	50
Bald Head	43 14 0	70 33 0	50
Cape Neddock	43 10 0	70 34 0	50
Boon Island Lighthouse	43 7 30	70 27 30	50
Boon Island Ledge	43 6 0	70 24 0	50
York Ledge	43 6 0	70 30 0	50
York River, Entrance	43 7 0	70 36 0	50
PORTSMOUTH *Lighthouse*, on Newcastle Island	43 3 30	70 41 30	50
Isles of Shoals Lighthouse	42 56 0	70 36 0	50
NEWBURY-PORT *Lights*, on Plum Island	42 47 45	70 46 50	52
Ipswich Harbour; Entrance of	42 39 0	70 45 0	53
Annis Squam, or Squam Lighthouse	42 40 0	70 39 0	54
Cashes Ledge, Shoalest Part	43 1 0	69 6 0	55
Cape Anne Lights, on Thatcher's Island	42 37 0	70 33 0	60, 65.
Cape Anne Bay, the East Point of	42 3 30	70 39 0	65
Lighthouses on Baker's Island	42 30 0	70 47 0	62
MARBLEHEAD	42 29 0	70 48 0	63
SALEM	42 31 0	70 51 0	62
Nahant Rock [15.]	42 26 0	70 50 0	61
BOSTON, Beacon Hill at [16.]	42 22 38	70 59 45	61
Cambridge, Town of	42 23 28	71 4 0	—
Long Island Light, in Boston Bay	42 20 50	70 54 0	61, 62.
Lighthouse Island Light, Boston Bay	42 20 36	70 49 10	60
Light on Cedar Point, near Scituate	42 12 0	70 42 0	60
Lights on Gurnet Point, near Plymouth	42 0 0	70 37 0	58
Entrance of Barnstaple Harbour	41 45 0	70 17 0	68
Race Point Lighthouse	42 4 0	70 14 0	66
CAPE COD *Lighthouse*	42 3 0	70 2 40	58, 66.
Lights at the Entrance of Chatham Harbour	41 42 0	69 57 0	71
Sandy Point of Chatham; South End	41 34 0	72 2 0	72
Shoal Grounds of George's Bank	41 40 13	67 44 10	56
Hard Sand; 15 feet [17.]	41 40 33	67 40 30	*Note.*
Lighthouse on Sandy Point, Nantucket I.	41 24 0	70 3 0	72, 76.
Sancoty Head, Nantucket Island	41 16 0	69 58 0	73, 74.
Tominy Head, (vulg. *Tom Never's Head,*) Nantucket	41 14 0	70 1 0	73, 74.
Nantucket Shoals; South Point	40 57 0	69 56 0	73
Sherburn Lower Lighthouse, Nantucket	41 18 30	70 6 0	76
Point Gammon Lighthouse, near Hyannas	41 37 0	70 15 0	72, 77.
Cape Poge Lighthouse, Martha's Vineyard	41 25 0	70 25 0	72
Holmes' Hole Lighthouse	41 28 30	70 36 0	72
Tarpaulin Cove Lighthouse, on Nashon Island	41 28 0	70 46 0	72
Gay Head Lighthouse, Martha's Vineyard	41 20 30	70 52 0	72, 78.
Noman's Land, near Martha's Vineyard	41 15 0	70 50 0	78
Sow and Pigs, Entrance of Buzzard's Bay	41 24 0	71 0 0	79
Bird Island Light, in Buzzard's Bay	41 40 0	70 43 0	84
New Bedford Lighthouse, on Clark's Point	41 36 0	70 55 0	81
Seaconnet Point	41 26 0	71 12 0	82
Beaver-tail Light, on Conanicut Island	41 26 0	71 26 0	86
NEWPORT, Town of	41 29 0	71 20 0	86
PROVIDENCE, Town of	41 50 41	71 25 20	87
Point Judith Lighthouse	41 23 0	71 32 0	86
Block Island, the S.E. Point	41 4 0	71 39 0	86
Watch Hill Point Light (Revolving)	41 17 0	71 59 0	88

UNITED STATES, CONTINUED.	Latitude North.	Longitude West.	Page.
	° ′ ″	° ′ ″	
Montuck Point Lighthouse	41 1 0	72 2 0	88
Shagwandanock Reef	41 4 30	72 3 0	91
Cerberus Rock, Entrance of Long Island Sound	41 8 30	72 4 0	91, 93.
Race Rock, near Fisher's Island	41 11 0	72 9 30	89
Lighthouse at the Mouth of Five Island Inlet	40 37 10	73 15 0	98
Sandy Hook Lighthouse, New York Harbour	40 27 30	74 2 10	96
NEW YORK; Cupola of Colombia College	40 42 43	74 3 27	96
City Hall	40 42 20	74 3 31	96
Fort Flagstaff [18.]	40 42 10	74 3 39	97
Nevisink Southern Lighthouse (Revolving)	40 23 50	74 1 0	96
Barnigate Inlet	39 48 0	74 6 30	102
Little Egg Harbour; the Bar	39 30 0	74 17 0	103
Great Egg Harbour; the Bar	39 18 30	74 33 0	103
Hereford Inlet	39 3 0	74 48 0	104
CAPE MAY, at the Mouth of the Delaware	38 57 0	74 55 45	104
PHILADELPHIA; Christchurch, in Second Street	39 56 54	75 10 30	107
Norriton; Observatory [19.]	40 9 56	75 23 30	—
DOVER, Town of	39 8 30	75 30 0	106
CAPE HENLOPEN *Lighthouse*	38 46 40	75 6 0	105
Cape May Bank; 2 fathoms of water	38 53 30	74 37 0	104
CAPE CHARLES, at the Mouth of the Chesapeake	37 11 0	75 55 0	107
Tail of the Chesapeake Middle Ground	36 58 0	75 47 30	108
CAPE HENRY *Lighthouse* [20.]	36 56 30	75 57 0	108, 109
New Point Comfort Lighthouse	37 20 30	76 12 0	110
Windmill Point	37 35 30	76 19 30	110
Smith's Point Lighthouse	37 52 30	76 17 0	110
Point Lookout	38 1 30	76 22 0	110
Maryland Point, in the Potomak	38 21 30	77 15 0	114
Mount Vernon	38 42 0	77 5 0	114
Alexandria	38 48 0	— — —	114
WASHINGTON; the Capitol of [21.]	38 53 0	77 0 20	114
Cedar Point, Entrance of the Patuxent	38 16 0	76 25 0	114
ANNAPOLIS, Town of	38 59 0	76 32 30	115
BALTIMORE, City of	39 18 0	76 39 0	117
Currituck Inlet; the Bar	36 26 30	75 45 0	118
Roanoke New Inlet [22.]	35 37 0	75 26 0	118
CAPE HATTERAS *Lighthouse*	35 15 0	75 31 0	119
Ocracock Lighthouse, Entr. to New Berne	35 5 30	75 58 0	120
Cape Lookout Lighthouse	34 39 0	76 37 0	120
Old Topsail Inlet, or Gore Sound	34 41 0	76 46 0	120
BEAUFORT, Town of	34 43 0	76 45 0	120
Frying Pan Shoals, S.E. Point of	33 36 0	77 50 0	121
CAPE FEAR, S.E. Point of	33 49 0	77 57 30	121
Cape Fear Lighthouse, on Bald Head	33 51 45	78 0 40	121
WILMINGTON; *New Inlet Lighthouse*	33 58 0	77 58 0	121
Georgetown Lighthouse	33 13 0	79 2 40	123
GEORGETOWN	33 22 30	79 9 0	124
Cape Roman	33 1 0	79 16 0	124
Charleston Lighthouse	32 40 0	79 44 0	125
Charleston [23.]	32 46 0	79 48 0	126
North Eddisto Inlet; Entrance	32 30 0	80 1 0	127
South Eddisto Inlet; Entrance	32 26 0	80 7 0	128
Hilton Head, Port Royal Entrance [24.]	32 13 0	80 30 0	128
Beaufort, in South-Carolina	32 26 0	80 31 0	129
Tybee Lighthouse, Savanna	32 0 40	80 40 0	128
SAVANNA, the Town [25.]	32 4 0	80 56 30	129

	Latitude North.			Longitude West.			Page.
UNITED STATES, CONTINUED.							
Hossaba or Ossabaw Sound, the Bar	31	50	0	80	51	0	130
St. Catharine's Sound, the Bar	31	40	0	80	59	0	130
Sapello Bar	31	32	0	81	6	0	130
Doboy Lighthouse, Entr. of Darien [26.]	31	23	0	81	16	0	130
St. Simon's Island; Lighthouse [27.]	31	8	0	81	27	0	131
Cumberland Island, North End	30	58	0	81	30	0	131
Cumberland Island, *Lighthouse*, on the S. End [28.]	30	43	15	81	35	30	131
Nassau River; Entrance of South-Channel	30	28	0	81	33	30	132
Bar of St. John's River	30	21	0	81	32	30	132
St. Augustin; *Lighthouse*	29	53	0	81	24	30	133
Matanza Inlet	29	42	0	81	19	30	135
Moskito Inlet	28	53	0	80	53	0	135
CAPE CANAVERAL	28	16	30	80	27	0	135
Outer Breakers off Cape Canaveral	—	—	—	80	21	0	135
The Tortolas or Hummocks, South End	27	28	0	80	21	0	135
Hillsborough Inlet; Entrance	27	15	0	80	11	0	135
Grenville Inlet; Entrance	26	48	0	80	2	0	136
New Inlet; Entrance	26	17	0	80	2	0	136
White Inlet	25	49	0	80	7	0	138
CAPE FLORIDA [29.]	25	43	0	80	5	0	138
Biscayno Kay	25	39	30	80	7	0	138
Florida Light-vessel (Two lights)	25	8	0	80	16	0	211
Great Inlet, near Sound Point	25	1	0	80	25	0	211
Old Matacumbe; West End of	24	47	0	80	53	0	209
Sombrero Kay	24	34	0	81	15	0	208
Bahia Honda, near the Pine Islands	24	33	0	81	26	0	208
Looe Kay; *Beacon Tower*	24	31	30	81	31	0	208
Kay West; *Lighthouse* on the West End [30.]	24	29	30	81	54	0	207
Sand Kay; *Lighthouse (Revolving)*	24	23	0	82	1	0	207
Boca Grande; Entrance of	24	27	0	82	17	0	206
West End of the Florida Reef	24	20	0	82	35	0	206
Coral Rocks, East of the Tortugas	24	31	0	82	42	0	206
Tortugas; *Bush Kay Lighthouse*	24	34	0	82	58	30	205
Tortugas Bank; Spot of 5 fathoms	24	28	0	83	11	0	205
S.W. End of the Tortugas Bank, 96 fathoms	24	20	0	83	23	0	204
Punta Larga, or Cape Roman	25	5	0	81	47	0	203
Boca Grande, of Charlotte Harbour	26	30	30	82	14	0	203
Boca Sarasota	27	16	0	82	40	0	203
Entrance of Tampa or Spiritu Santo Bay	27	42	0	82	50	0	202
Anclote Kays, Middle of	28	20	0	83	44	0	201
Mouth of the River Sawaney	29	17	0	83	38	0	201
Deadman's Bay	29	40	0	83	29	0	201
St. Mark's, or Apalaché [30.]	30	12	0	84	36	0	201
S.W. Cape of Apalaché Bay	29	50	0	84	44	0	201
Cape St. George of Apalachicola [30.]	29	33	0	85	20	0	201
Cape St. Blas	29	36	0	85	36	0	198
St. Andrew's Isle	30	1	0	86	49	0	197
Entrance of the Bay of Santa Rosa	30	23	0	86	40	0	197
Bar of Pensacola	30	16	30	87	33	0	195
PENSACOLA, the Town	30	24	0	87	25	0	197
Entrance of Perdido Bay	30	15	0	87	44	0	195
Bar of Mobile	30	9	0	88	15	0	194
MOBILE, the Town	30	39	0	88	16	0	194
Biloxi Bay, Entrance of	30	18	0	88	58	0	193
Ship Island, West End	30	13	0	89	6	0	193
Naso Anchorage, on the N.W. of the Chandeleur Islands	30	0	0	88	59	0	192
Log Isle, at the S.W. end of the same	29	40	0	88	59	0	192

	Latitude North.	Longitude West.	Page.
UNITED STATES, CONTINUED.			
Grand Gosier, Middle of	29 30 0	89 10 0	192
Breton Island, Middle of	29 28 0	89 18 0	192
Pass a l'Outre of the Missisippi	29 13 0	89 10 0	186
Bar of the Balize, or S.E. Pass of the Missisippi	29 5 27	89 8 0	189
South Pass of the Missisippi; the Bar	28 58 0	89 14 0	190
S.W. Pass of the Missisippi; the Bar	28 58 0	89 30 0	190
NEW ORLEANS [31.]	29 57 45	90 8 0	183
Racoon Point	29 1 0	90 57 0	182
Point Fierro or Defer, near Atchafalaya Bay	29 18 0	91 26 0	182
Bayou Constantè, Entrance of	29 30 0	92 34 0	182
River Mermentau, Entrance of	29 30 0	93 0 0	181
Mouth of the Sabine	29 37 0	93 57 0	180
MEXICAN STATES AND SEA. [32; 40.]			
Culebras Point, Entrance of Galveston Bay [33.]	29 10 0	96 1 0	180
Bar of S. Bernardo	29 0 0	96 50 0	179
Pasa del Caballo	28 12 0	97 24 0	179
Mouth of the Rio Bravo del Norte [34.]	25 55 0	97 24 0	178
Rio de S. Fernando, or del Tigre	25 22 0	97 35 0	178
Boquillos Cerradas	25 0 0	97 45 0	178
Barra de Santander	23 46 0	98 2 0	178
Barra del Tordo	22 52 0	97 55 0	178
BAR OF TAMPICO [35.]	22 15 56	97 50 18	176
Cape Roxo	21 36 0	97 18 0	175
Tanguijo Shoal	21 4 0	97 14 0	175
Shoal of Tuspan	20 55 0	97 6 0	175
River Tuspan, Entrance of	20 50 0	97 15 0	175
Monte Gordo	20 19 0	96 51 0	175
Punta Piedras, or Rocky Point	20 0 0	96 34 0	175
Punta Delgada	19 51 0	96 28 0	175
Bernal Point	19 40 0	96 25 0	175
Point Zempoala	19 30 0	96 21 0	175
Punta Gorda	19 14 52	96 10 30	175
Lighthouse of S. Juan de Ulua [36.]	19 12 15	96 7 12	164
VERA CRUZ, Centre of the Town	19 11 40	96 7 30	162
Cofre de Perote	19 32 54	97 8 0	162
Peak of Orizaba, or Orizava	19 2 17	97 12 15	163
Anegada de Fuera, or Outer Anegada	19 7 30	95 53 0	161
Point Salao Chico	19 0 0	95 56 0	160
Point of Anton Lizardo [37.]	19 3 45	95 56 25	160
Alvarado, the Bar of	18 45 0	95 42 0	159
Roca Partida, or Cleft Rock	18 43 0	95 2 0	159
Point of S. Juan	18 18 0	94 33 0	159
La Barilla	18 10 0	94 30 0	159
Barra de Goascoalca	18 10 0	94 17 0	159
River Tupilco, Entrance of	18 26 0	93 21 0	159
Barra de Chiltepeque	18 26 20	92 59 0	159
Barra de S. Pedro	18 40 0	92 25 0	143
Punta de Xicalango, at the entrance to Laguna [38.]	18 41 0	91 50 0	143
Puerto Escondido, or Hidden Harbour	19 0 0	91 8 0	143
Javinal Point	19 12 0	90 53 0	143
Champoton	19 23 0	90 40 0	143
CAMPECHE', Town of	19 51 10	90 28 15	154
Jaina	20 13 0	90 25 0	143
Point Desconocida	20 47 0	90 21 0	143
Monte No-te-perderas, near Piedras Point [39.]	21 10 0	90 5 30	142
Castle of Sisal	21 10 30	90 3 0	142

	Latitude North.			Longitude West.			Page.
MEXICAN STATES AND SEA, CONTINUED.							
Sisal Reef; 9 *feet*·····[39.]····	21	20	44	90	9	36	145
MERIDA ·····	20	55	0	89	43	0	140
Vigia de Chuburna ·····	21	18	30	89	34	0	142
Vigia de Ygil·····	21	20	30	89	25	0	142
Vigia de Telchaac ·····	21	22	0	89	17	0	142
Vigia de Sta. Clara ·····	21	22	0	88	59	0	143
Entrance of the Rio Largartos, or Lizard River ····	21	36	0	88	12	0	141
Cape Catoche of the new charts, or North point of Jolvas Isle·····	21	35	30	87	6	30	141
Cape Catoche of the old charts; old buildings ····	21	33	0	86	59	40	141
Isle Contoy; North point ·····	21	32	0	86	48	45	140
Isle Mugere; stone buildings on south point ·····	21	12	15	86	43	15	140
Isla Cancun; South point ·····	21	2	0	86	47	9	140
CAMPECHÉ BANK, &c.							
Negrillo, seen in 1806 ·····	23	25	0	90	12	37	148
Argus Bank, seen in 1818 ····· ·····	24	3	30	89	42	0	149
Vigia, seen in 1800 ·····	24	6	0	90	5	0	149
Bozo Rocks, 1818·····	24	6	0	91	7	0	150
Alacranes, the South Point ·····	22	22	0	89	40	0	146
Arenas or Sandy Isle ·····	22	7	0	91	24	0	148
Baxo Nuevo, or New Shoal ·····	21	50	0	91	55	0	147
Madagascar Shoal; East end ·····[39.]····	21	26	6	90	17	30	*Note.*
——— West end ·····	21	26	18	90	18	48	—
The Triangle, the S.E. Point ·····	20	53	0	92	10	0	147
Spey Bank and Kay·····	21	2	0	92	12	30	147
The Obispo, or Bishop's Shoal·····	20	30	0	92	10	0	147
The Arcas, the Centre of ·····	20	14	0	91	58	0	146
Cabezo, or Rocky Head ·····	20	4	0	92	8	0	147

GENERAL REMARK ON THE TABLE.

This Table is to be considered as we consider a *General Chart:* that is, as constructed by the aid of various observations and determined points, the intervals being regulated thereby, and supplied from subordinate documents. We do not profess to give it as a collection of points wholely determined by observation; and it is, therefore, necessarily defective: but, defective as it is, we humbly trust that it will be found sufficient to rectify very numerous errors which exist in preceding tables; and which, having been *mistaken for authorities*, have misled thousands; many, perhaps, to destruction. The principal authorities on which this table is founded, are described either in our '*Memoir*' on the Atlantic Ocean, or in the following Notes; and we shall be happy to receive information for its future improvement.

Since our first Edition we have, however, been able to supply many deficiencies; and partial Surveys of different parts of the Republican coast, with new Surveys of the West Indies, have furnished many acceptable corrections; so that we can hardly imagine that an error in latitude, amounting to more than two minutes, can, in any instance, be found.

NOTES

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NOTES

REFERRED TO IN THE PRECEDING TABLE, INCLUDING ALSO

VARIOUS INFORMATION

ACQUIRED SINCE THE FOLLOWING PART OF THE WORK WAS PRINTED.

1.—BERMUDAS.—Anterior to the year 1804 the Bermudas were laid down considerably to the eastward of their true position, even in works considered as of high authority. In 1803 the points of these isles were given to the Editor of this work by Mr. Murdo Downie, Master of H.M. Ship *St. Alban's*, and they have since appeared, as so given, in the *Memoir on the Atlantic*. It may be seen, on reference, that these do not vary, in a material degree, from those now given in the table, which will be found to accord with the actual Survey of the islands made by *Captain Hurd*, R.N. between the years 1783 and 1797.

Mr. Downie's longitudes, from the *mean of different observers*, are three minutes less West than Captain Hurd's; but observations taken in H.M.S. *Niemen*, Captain Sibly, in 1822, appear to confirm the latter. A chronometer, in excellent order, by run from Halifax, (see next note,) gave 64° 48′ 6″ for the longitude of the crane at the dock-yard, in Ireland's Island; and this result was verified between Jan. 1, and April 9, of the following year, 1823.

We have been the more particular in this statement, because, in a table lately published, the longitudes of these points have been given from four to seven minutes farther *West*; which, as above shown, may be considered as incorrect. *Wreck Hill*, in the table alluded to, is given in 64° 57′ 21″ W. instead of 64° 50′ 0″.

The population of the Bermudas, according to returns made in 1832, amounted to, whites, 3,900; coloured, free, 740; negroes, *then* slaves, 4,600. Total, 9,240.

With the Remarks on these islands, by Mr. Dunsterville, given in pages 11 and 12, the following, since made, may be included:—

"The land, generally, of these islands, is low; yet there are many parts, as *Gibbs' Hill*, *Mount Langton*, the north part of *St. George's* and *St. David's*, that may be seen in clear weather, five leagues off. The isles, as shown hereafter, are surrounded by most dangerous reefs, the S.E. side excepted, which may be approached within a mile, until abreast of the N.E. point, called *St. David's Head*. Off this Head, pilots are readily obtained by displaying the usual signal. The government pilots may be known by a narrow blue burgee, with a broad arrow in white therein.

From the S.W., the Bermudas appear, when at four leagues distant, like an assemblage of detached islands. On approaching, from that quarter, the signal station on Gibb's Hill will soon be recognized. On arrival near St. George's, and in rounding St. David's Head, you will find one or more pilots in waiting. Rocky ground extends about half a mile from the Head, but the eye will be a sufficient guide for avoiding it. The soundings along the N.E. side of the reef give sufficient warning, but a vessel should not stand into less than ten fathoms. From 23 or 24 fathoms, the depths shoalen gradually on approaching the reef.

There is anchorage without the *Narrows*, on a spot called *Five-fathom-Hole*, with St. Catharine's Point about W.N.W., and St. David's Head S. ¼ W.; but, in letting go the anchor, look out for a clear spot.

In proceeding for the Narrows, the first buoy seen, which is chequered, is the leading buoy for the fairway. In the Narrows are 6 and 7 fathoms of water; here you leave the white buoys on the starboard, and the black on the larboard side.

If

If you intend anchoring in *Murray's Anchorage*, bring St. Catharine's Point to bear East; the signal staff at St. George's S. by E. ½ E., in 9½ fathoms, chalk bottom, at a quarter of a mile off shore. From this anchorage to *Ireland Island*, where the men of war lie, is about S.W. by S. to abreast of Mount Langton, the governor's country residence, keeping the shore about one quarter of a mile distant, and going with a leading wind inshore of the buoys, which are placed on shoal corally spots. When Ireland bears about W. by N., you then haul for the island, passing betwixt two corally spots, nearly abreast the Admiral's house, which are both buoyed. In clear weather all the reefs are readily discerned, and may be avoided with a common degree of care. From Murray's anchorage to Ireland you have, in the channel, 7 and 6 fathoms.

During the summer months, from April to September, the winds prevail from S.S.E. to S.W. Thermometer 80° to 84°. About the latter end of September the northerly winds set in, when the thermometer falls to 70° and 74°; quite a bracer for the constitution. The rise of tides at springs is about 5 feet, neaps 2 or 3 feet. High water at Ireland full and change at 8 o'clock. The tide in the narrows sets from one to two miles in the hour.

The height of Gibbs' Hill signal station is about 200 feet: of Wreck Hill about 150. On the S.E. side is a large space of sand, called *Middleton Bay*, which is very remarkable. The North Rock is about 6 feet high, 20 feet long, and 6 feet wide: here the currents are strong and very variable; but mostly to the eastward in the offing.

A branch pilot has 3*s*. per day, with allowance of provision, and one dollar per foot for any government ship.

Some additional Remarks on the seasons of Bermuda, by Mr. H. Davy, of H. M. S. *Cornwallis*, may be found in the third volume of the present work, page 40, added to which is a description of the route, during winter, from those islands to Barbadoes and Granada.

Mr. Davy, in his recent description of the passages of the *Cornwallis*, has noticed that, in the spring of the year a great number of whales visit the Bermudas; and, on the southern side, the sea, for a considerable distance, abounds with them. They are generally in the offing during the day, but by night they come close in shore and about the reefs, where the boats are in waiting for day-light, and are engaged in whaling between that and ten o'clock. In 1838, the Cornwallis arrived at the Bermudas, and was there during a great part of the season, which is from March to June. There are twelve boats belonging to four companies, who are generally successful, and consider 15 fish as good work. The whale is a great boon to the Bermudians, and the season is one of feasting and enjoyment.

The islands being supplied principally from America causes the price of provisions to be high. The charge for meat is 10*d*. to 1*s*. per lb. It is seldom, therefore, that the mass of inhabitants, the black population, can procure such food. The whale then is every thing to them, and the moment he is landed the carcase becomes public property; a red pendant is hoisted at all the signal stations, whereupon the people proceed to the spot, and with proper instruments cut out large blocks of it, taking from where they like and as much as they wish for. They are particularly fond of whale beef, and speak of it as excellent. The proceeds of the remainder are sufficient to keep hundreds of people until the returning season.

Pilotage, &c. Castle Harbour is nearly filled up, is yearly becoming more so, and St. George's is not fit for large vessels. Murray's anchorage, and that at Clarence Cove and Grassy Bay, are, therefore, the only places fit for men of war. The channels leading to them are intricate, and to be taken by the native pilot only, whose sight becomes so instructed as to stand forward and looking through the water, thread the shoals with perfect safety. (*See page* 10.) Moorings of the heaviest description are laid down for the flag ship, and it will be seen that it is the most singular anchorage perhaps in the world." (*May* 1, 1839.)

On the 6th of July, 1839, a respectable body of merchants, &c., assembled at the town hall, to take into consideration the propriety of erecting lighthouses on the islands, in consequence of the number of vessels, chiefly *foreign*, which had been lost upon the reefs in the vicinity. Within ten years more than fifty vessels had been stranded upon them. A copy of the proceedings was sent to the governor, and there can be no doubt that his Excellency, the author of "*The Law of Storms*," will strenuously recommend, to her Majesty's government, the adoption of a project so interesting to humanity.

In page 11, line 9, from the bottom, for reefed topsail, read reefed foresail; and add, We were lying-to on the starboard tack.

Vessels from Bermuda for Jamaica, by the Mona Passage, have been recommended to take the first set in of the northerly winds as the most favorable time for proceeding. The

best course is S. by W., allowing for variation one quarter of a point west for 300 miles; no variation the next 200, and one quarter of a point east to Porto-rico, &c. More upon this subject may be found in our second volume, for the Sea of the Antillas.

2. SABLE ISLAND.—In page 13, hereafter, is a note indicating that Sable Island may probably lie more to the eastward than the position assigned by M. des Barres' Survey: it may be added that a similar statement assigns for the latitude of its southernmost point 43° 55½′, instead of 44°; the easternmost sandhill in 43° 59′ 5″ N. and 59° 44′ W.: the westernmost sandhill in 43° 56′ 42″ N. and 60° 9½′ W. We can only repeat that, in approaching, all caution and attention to the lead are required; for these conflicting statements afford no decision.

The SIGNALS established at Sable Island, noticed in page 14, and used to communicate with the island by any vessel visiting or passing it, as latterly arranged, are as follow:—

A flag at main topmast or foregallant mast-head,	*denotes*	All well on board.
main mast-head, ...		Are there any wrecks?
main gaff, ...		Can a boat get off?
main gaff, half-hoisted,.....		How many persons on shore?
main rigging,.....		Vessel in distress.
foretopmast head, ...		Vessel coming to the island.
fore rigging, ...		Are you in want of provisions?
A flag at the mast-head in the island,.....		That a boat will be off immediately.
the mast-head, if kept flying, ...		All well on shore.
the East yard-arm,...		Are you coming to the island?
the same, half-hoisted		A boat cannot get off.
the West yard-arm, ...		Not in want of provision.
the same, half-hoisted, ...		In want of provision.
One Ball or more, East yard-arm, ...		Ten persons for each ball.
West yard-arm,.....		One wreck or more.
A flag under one ball or more, West yard-arm,		One or more of H.M. Ships.
A pendant under one ball or more, West yard-arm, ...		One of H.M. packets.

The Flag used on the Island is red, white, and blue, horizontally. A Union Jack, or any other flag, is used by the vessel.

Any of the above signals, when made, should remain up ten or fifteen minutes, or until answered. A gun fired, particularly in hazy weather, will draw the attention of the inhabitants. All other flags must be down when making signals. (*April*, 1837.)

The following report on the changes in the form and extent of Sable Island, since the year 1811, was addressed to the Collector of Customs at Halifax, in 1837, by the superintendent, Mr. Darby. See pages 13—16.

On the 30th of September, 1811, there was a severe gale of wind from S.S.E. that washed away all the dry part of the N.W. Bar, extending 4½ miles N.W. from the high part of the island, and half a mile broad. The greater part of it was covered with grass, and on the outer part of it was a hill, elevated about 25 or 30 feet above the level of the sea, and on which the rigging and sails of a brig that was wrecked there that summer were placed for safety; but these were all lost when it washed away. There is now, over the same extent of Bar 4 or 5 fathoms of water. The sea has been reducing the western end both since and before that time, at the rate of nearly one sixth of a mile annually.

"Easterly, southerly, and S.S.W. winds set a rapid current along shore in shoal water, to the W.N.W. and N.W.; that is, along the shore of the western end of the island, but not the eastern nor middle, as there the current, with southerly and S.W. winds, sets to the eastward. The natural tendency of the flood-tide is toward the coast. When it strikes the island it flows to the eastward, over the N.E. Bank, and to the westward, over the N.W. Bank, and passes the west end, in a N.W. direction, so rapidly that it carries the sand with it; and the hills of the west end being high and narrow, they are undermined at their base by it, and tumble down some thousands of tons of sand at a time. This the current beneath catches, and sweeps away to the N.W., increasing the bank. So soon as this current passes the extreme point of the dry bar, it tends more across the bank to the N.E.; the motion of the sea contributing to keep the sand in motion; the current carries it to the N.E., and spreads to the N.W."

Although across the bank from the island, to the distance of 15 or 20 miles to the N.W., there is a flood and ebb tide, the flood setting to the N.N.E., the ebb to the S.S.W., the flood comes over a broad flat bottom until it arrives at the highest ridge of the Bar, bring-

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ing the sand with it so far. It then finds a deep water suddenly to the eastward of the Bar, and its strength is as suddenly lost: the waters pitching over this bank settle gently in deep water, and the sand going with the current does the same, and keeps the eastern edge of the bar and the bank very steep; but to the southward and westward it is flat and shallow.

The ebb-tide setting gently to the southward and westward, meets the steep side of the bank; and, rising above it, passes over and increases in strength, merely levelling the sand that had been brought up by the last flood. It does not carry it back until the next flood comes, which brings up a fresh supply from the washing of the island; and so alternately the sand changes with every flood and ebb tide. The consequence is, that although the west end is several miles to the eastward of where it was in 1811, yet the shoalest or eastern part of the bar or bank has the same bearing from the dry land that it had then, which plainly shows that the bar and bank have increased eastward as fast as the island has decreased in the same direction. But the distance of the outer breakers has not increased more than about two miles; in 1829 their whole distance from the land being from 10 to 14 miles, in rough weather bearing N.W. from the island. There is a passage across the Bar inside, above four or five miles broad, with 3 or 4 fathoms of water.

Since 1811, or in about 26 years, an extent of 4½ miles of high land has been washed away, which averages rather better than one sixth of a mile every year. In the last few years it is nearer to one fourth of a mile every year, owing to the land being much narrower than it was in the first fifteen years of the elapsed time. The whole of the island that does not wash away grows in height: the most windy seasons cause the greatest elevation of parts where loose sands can be blown on to them; but the island, in general, becomes narrower.

The eastern end of the island has not wasted much in length since my knowledge of it,—nearly 30 years. The high land (about a mile of it) has blown down with the wind, (but not washed down with the sea, as at the west end,) and now there is a low bare sandy beach, extending in a N.E. direction from the high land about three miles. I think about one mile of this was high land, or sand hills, thirty years ago; the other two miles were formed by a low sandy beach, as at present: the elevated portion of the one mile of course has been blown into the sea, and gone to increase the shoal water on the Bar, being carried there by a strong flood-tide setting to the N.N.E. The Bar itself extends from the dry part E.N.E., and at the distance of 12 or 14 miles from the high land, a very shoal spot always breaks, except when dry, at which time seals may be observed lying on it. Between this spot and the land is a passage about five or six miles wide, with from 3 to 4 fathoms of water in it. This bar and bank are also very steep on the north western edge, and shallow and flat in the opposite directions. The Bar travels to the northward and eastward slowly, the N.W. Bar travels to the northward rapidly. The variation of the compass, by amplitudes, on the 9th of February, 1837, was 20° 22′ W. and I think increasing.

The lake in the island fills up very fast, generally by sand blowing into it from all directions, and partially by the sea flowing over the south coast in many places in heavy weather, and conveying the sand with it.

The improvements on the island have very much increased within the last few years. When the French frigate was cast away in 1822, the crew, all except the officers, had to cook and live in the little hollows and sheltered spots about the island, from the want of buildings to cover them; and yet they were grateful and uncomplaining. I have since seen Englishmen with a comfortable house over their heads, good convenience for cooking, and plenty to eat, yet dissatisfied and grumbling. There are now seventeen considerable buildings on the island, besides some three or four small ones, that would, upon an occasion, afford shelter to 400 or 500 persons." (Signed) Joseph Darby.

3. HALIFAX.—The latitude of the naval yard of Halifax, from observations very carefully made by the officers of H.M.S. *Niemen*, in 1822, was 44° 39′ 37″. This was gained by eleven *meridian* altitudes with the artificial horizon, and several observations made on each side of noon at small intervals; the mean true altitudes being computed from the hour angles. The longitude, 63° 33′ 43″, was obtained as the mean result of more than thirty sets of lunar distances. These observations were made at considerable varieties of temperature, for which corrections were applied, and the index errors of the sextants were carefully ascertained at each observation.

We formerly gave the longitude from M. des Barres, &c. as 63° 32′ 40″; and therefore presume that a statement of 63° 37′ 48″, which has lately appeared, is four minutes too far West.

4. SAMBRO' Lighthouse.—In 1823 the officers of the *Niemen*, above mentioned.

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made the longitude of Sambro' light 63° 30' 57". In 1822 they had made it 63° 30' 0", and it was subsequently gained by them as 63° 30' 8". (*Mean* 63° 30' 22".) M. des Barres gave it as 63° 31'. We, therefore, reject a statement of 63° 35' 16" lately published.

[For the observations made in H.M.S. *Niemen*, quoted in the preceding notes, we are indebted to the Master, *Mr. Edward Sabben*.]

5. HALIFAX EASTWARD, to the Gut of Canso.—The new Directory for the coasts of Newfoundland and Nova-Scotia, contains a copious description of the latter from Cape Canso westward; but the following remarks by Mr. *Henry Davy*, on proceeding from Halifax *eastward*, to the Gut of Canso, may not be the less acceptable.

H.M.S. *Cornwallis*, June 4, 1838. Wind North, with fine weather; sailed for the Gut of Canso. Passed out between the Thrumcap and Rock-Head shoals to within a cable's length of the Thrum-cap buoy, having 10 fathoms of water. This channel is quite safe. Being thus clear, E.S.E. 27 miles led us to the southward of the Jedore shoals, then East for White Head, wind and weather looking favorable.

Just to the eastward of Cold Harbour is a remarkable *red* cliff, making in a well-formed saddle; the red is bright, and the eastern coast is easily recognized thereby, while the coast westward of Halifax is known by its *white* cliffs. Strangers running from Jedore to Canso should not approach the coast nearer than ten miles until abreast of Torbay. This is a spacious bay, having Berry Head as its western point and Cape Martingo its eastern, five miles apart. Whitehead island, immediately to the eastward of Torbay, is the most remarkable land on the coast, and is as a beacon to the pilot; it stands well out, and from the westward terminates the eastern view. Being ten miles south of it, steer N.E. by E. for Canso lighthouse, a tall white building, which makes well out to seaward on a small low isle, called *Cranberry Island*, and exhibits a good fixed light. The lighthouse must be brought to bear West before keeping away, then steer N.N.W. until George Island bears West, thence N.W. and N.N.W. for *Cape Argos*, avoiding the *Cerberus Shoal*, which is very dangerous, and directly in the track. Leave it on the larboard hand. Cape Argos is the outermost S.E. point of the Gut of Canso; it is bold to approach, and makes like a round island. *Nautical Mag.* May 1839.

GULF OF ST. LAWRENCE.

The Eastern Coasts of New Brunswick and Northern Coasts of Nova-Scotia are described in our 'Directory for Newfoundland,' &c. published in 1837, but the increasing importance of its several harbours demands all recent information which affects them, and here therefore we introduce the descriptions which follow:—

6. SHEDIAC.—"The port of Shediac, on the eastern side of the province of New Brunswick, possesses the most favorable advantages and facilities for establishing a depôt and a communication thence to the Bay of Fundy, for sailing and steam vessels, not exceeding 16 feet of water, as 18 is to be obtained across the Bar and up to the point of Le Chene, at which place a wharf is to be built, the provincial government having already allotted money for that purpose. A Canal is in contemplation to communicate with the head of the Bay of Fundy, but its exact line is not yet determined on, but proposed by way of Dorchester Isle, a small isle at the entrance of the River Memramcook, as decidedly the most eligible: for we are assured that 12 feet may be found in the entrance of that river at low water; and there would consequently be little or no delay over land; and moreover the river can easily be dammed up at a little way from its entrance, with a rise of 50 feet of water. Another point of great importance is that the Memramcook is not backed by any heavy stream or rear water; it is consequently slow in its rise and fall. All other approaches, by the Petcudiac or Cumberland Basin, run at a furious rate, and would be attended with great risk and delay. When this canal is cut, a distance not exceeding 16 or 18 miles, steam boats will be able to effect a passage from the wharfs in St. John's to Quebec in 56 or 60 hours, according to the state of the weather, &c."—*Captain Chas. Hare*, 1839.

7.—PICTOU,—its Roads and Harbour, as described by Mr. Geo. Peacock, master of H.M.S. *Andromaché*, 1839:

"Pictou is a place of rising importance; its timber trade has rather fallen off of late, but the working of the coal-mines in the immediate neighbourhood, has opened a very brisk trade in that article, which occupies some hundreds of vessels, of all dimensions, in the

the coasting and foreign trade, many of which carry from 500 to 700 tons, chiefly trading to the United States.

The best anchorage in Pictou Roads is in 7 fathoms, with the following bearings;—the *Lighthouse* West; Point Caribou north; and Roaring Bull Point S.E.: the latter is a high bluff, sloping to the southward, and has a small white house on the slope. From this bluff a reef extends North, three cables' length, and from Point Carribou another, west, nearly half a mile. Here you are sheltered completely from S.E. by the S. round to North, and, in a great measure, as far as N.E. by the island and reefs off it; in fact, the only winds that throw in any sea, are those from the S.E. by E. to N.E. by E., and they are fair for running into the Harbour, which may be attempted, in almost any weather, by ships drawing from 18 to 20 feet.

To Run in, bring the small white house to the left of the Lighthouse, and close to it, on with a long building appearing off the starboard point up the harbour,* bearing W. ¼ N.;—keep them on until Roaring Bull Point begins to be shut in with the east land, by which time you will be pretty close to the low sandy beach on which the lighthouse stands. Then haul over to the northward toward a bushy tree standing by itself on the north shore, until you are in mid-channel between it and the lighthouse point. You may then proceed up the harbour, west, in mid-channel, toward the point with the building above mentioned, and, rounding it at a convenient distance, anchor at pleasure off the town in 7 or 8 fathoms. Or, if only taking the Harbour for shelter, you may anchor any where within the lighthouse in mid-channel. The holding ground is excellent, and you are here secure from all winds.

On the Inner Bar, at high water spring tides are from 22 to 23 feet of water; on the outer Bar, 5 fathoms; between the Bars, 7 and 8 fathoms. The tide on full and change flows at 10 h., and rises from 6 to 8 feet, according to the wind: neaps rise from 3 to 5 feet. *The Lighthouse* is painted white, and is very conspicuous for showing a *fixed* light.

In order to proceed in the night, with a vessel of easy draught, bring the light to bear W. ¼ N. and steer for it until within about 50 fathoms off it, and then haul round it gradually, at about that distance, not going into less than 3 fathoms.

Pictou appears to me to be a harbour very easy of access and very capacious. The roadstead is certainly one of the best in the world, the bottom clay and mud. There is anchorage under Pictou Island, but it is by no means recommended. This island may be seen from a ship's deck 4 or 5 leagues off; a reef extends from its east end about a mile, and from its west end more than half channel over. The 3 fathom bank marked in some charts, it is said does not exist." *Nautical Magazine*, March 1839.

In the valuable miscellany just mentioned, of June 1839, are some very interesting "Notes on the St. Lawrence Fisheries," by Captain *R. Fair*, R.N., and touching on Pictou are the following remarks:—

"The trade of this port is rapidly increasing, and the town of *New Glasgow*, in the neighbourhood of the coal-mines, (distant nearly eight miles from Pictou) promises to be of considerable importance. Upward of 30,000 tons of coal were exported from these mines in the year preceding our visit, most of which was for the United States, and in American bottoms. There is no fishing carried on in Pictou. The country around, being agricultural, is rapidly improving; and the quick intercourse by steam with Prince Edward Island promises to be of great advantage."

SOUTHERN COAST of NOVA-SCOTIA, CONTINUED.

8. SHELBURNE or CAPE ROSEWAY LIGHTHOUSE. The position given in the table is that of M. Des Barres. Mr. Backhouse places it farther North, as shown in page 26, but the former, we presume, is correct.

9. CAPE SABLE and the points to the *north-eastward* were formerly given as represented by M. des Barres in 1776, whose longitude, as well as latitude, appeared to be nearest to the truth. But it may be observed that M. de Chabert, the French astronomer, in 1758 gave the latitude of the Cape, from his own observations, as only 43° 23′ 45″; Mr. Jones, in 1829, gave it as 43° 23′ 57″; Mr. Lockwood, in 1818, gave it as 43° 27′ 40″; and a Chart of the Bay of Fundy, dated 1st May, 1824, has it even so high as 43° 28′ 10″. But see the next note.

* This building lies to the left of a small but remarkable gap in the N.W. land.

10. SEAL ISLAND, GRAND MANAN, &c.—Lieut. *Chas. Hare*, of the Royal Navy, a gentleman whose name we have had occasion to mention with respect, in our former works, made, in 1828, some observations for determining the latitude of the Southern Seal Islands, the result of which is given in our Memoir on the Atlantic; whence it would appear that this island is commonly represented more than three miles to the northward of its true place.

Lieut. Hare also made, during the same voyage, outward and homeward, observations for determining the latitude of the S.E. side of the *Grand Manan Island*, which, *he* concluded, must confirm, beyond all doubt, that the whole body of that part of the island must be brought southerly, in order to be correct.

At the time this information was received we were doubtful of its accuracy, so far as these remarks affected *Grand Manan;* not suspecting that the charts, then recently published by authority, could possibly be incorrect.

But, under the orders of Rear Adm. Sir Chas. Ogle, Mr. *John Jones*, Master of H.M.S. *Hussar*, in 1828, 29, and 30, made a series of observations upon the coasts of Nova-Scotia, New Brunswick, &c. from which he places the south point of Seal Island in latitude 43° 23′ 51″, (longitude 65° 59′ 42″,) or three miles more to the southward than in the late chart.

Again, as to the *Grand Manan*, Whitehead Isle, on the S.E., is given by Mr. Jones in latitude 44° 36′ 59″, while in the chart it appears in 44° 41′ 0″, or four miles more to the northward. Lieut. Hare made the difference about five miles.

11. YARMOUTH has been recently a place of increasing consequence, and appears like a rising village of New England. "The little red coloured Acadian cottages are succeeded by large frame houses, neatly painted white; and the occasional appearance of square-rigged vessels and smaller craft in the harbour indicates the rising efforts of a spirit of commercial enterprize."

Yarmouth town consists of a "street," as it is called, of nearly two miles in length, on either side of which a respectable dwelling-house occasionally presents itself, separated from its neighbours by long intervals of field or garden. The inhabitants are chiefly the descendants of emigrants from New England; they possess, therefore, by inheritance, a spirit of activity which does not appear likely to degenerate upon the soil to which it has been transplanted.

The harbour is but indifferent; although well protected from the swell of the ocean by a long neck of land and an island at the entrance. (*Captain Moorsom's Letters from Nova-Scotia*, 1830.)

12. BRYER ISLAND LIGHTHOUSE.—M. des Barres gives Bryer Island as in 44° 22′ 5″ N. and 66° 21′ W.; but we are constrained to follow up the preceding correction of Grand Manan, and thus give it more to the southward. Mr. Jones gives the latitude as 44° 13′ 51″.

POINT PRIM is also given by M. des Barres, as in 44° 45′ 30″ N. (and 65° 46′ 30″ W.) four miles higher than the latitude given in the table.

13. The QUAKO LEDGE is described in page 34, hereafter, and the Tides of the Bay of Fundy, generally, in pages 29, 30. But it may be proper to notice that the ledge has several irregular patches of rock lying off its N.E. side; the ledge itself shows at half-tide, and dries for about 100 yards; but at high water, of common tides, it has 12 feet over it. At half a mile to the N.E. the eddies, with the flood, are strong and various; taking a ship's head nearly round the compass in the space of half an hour. The ebb sets, as a true tide, in a W.S.W. direction toward the ledge. The soundings, at about two cables' length around, are from 7 to 14 fathoms, but they shoalen most gradually from the N.E. The night tides here, and generally throughout the bay, are highest. At St. John's they are likewise so during summer; but the contrary, between the equinoxes, during the winter months.—*Admiralty Survey*.

14. ST. JOHN'S, &c.—M. Des Barres gave the position of the Cape or Point Maspeck, as 45° 18′ 27″, and 65° 57′ 35″ W. It will be seen, by reference to the Table, that it is now represented nearly 6 miles more to the south; and this correction, of course, affects St. John's, and all the coast westward to Pasamaquoddy Bay.

15. NAHANT ROCK.—(See page 61.) The Nahant Rock is a remarkable spot; it has an hotel upon its summit, which is a place of great resort for the metropolitan New Englanders: its area is about a square half mile, and it is distant nearly a mile from the main

main land, to which it is connected at low water. The grown or ground swell, with its majestic heave, is here going on for ever.

The promontory itself, is never wholly left by the ebb; but from its western extremity there extends a narrow ridge, scarcely broad enough for a horse path, impassable for the rocks and sea-weed by which it is matted, and extending just at high water mark from Nahant to the main land. Seaward from this ridge, which is only the connection with the continent, descends an expanse of sand, left bare six hours out of the twelve by the retreating sea, as smooth and hard as marble. For three miles it stretches away without shell or stone, a surface of white fine-grained sand, beaten so hard by the eternal operation of the surf that the hoof of a horse scarcely marks it, and the heaviest wheel leaves it as printless as a floor of granite. This will easily be understood when we reflect on the tremendous rise and fall of the ocean swell, from the very bosom of which, in all its breadth and strength, roll in the waves of the flowing tide, breaking down on the beach, every one with the thunder of a host precipitated from the battlements of a castle. Nothing can be more solemn than the sound produced by the succession of these plunging surges: and, when the '*tenth wave*' gathers far out at sea, and rolls onward to the shore, first with a glassy and even swell, as if some mighty monster were lurching inland beneath the water, and then, bursting up into foam with a front like an endless and sparry crystal wall, it advances and overwhelms every thing in its progress, till it breaks with a centupled thunder on the beach. *Notes of a Traveller*, 1835.

16. BOSTON.—According to the statement of an officer which we have lately received, the longitude of the State House at Boston is 7° 27′ 16″ West of Halifax. Assuming, therefore, the latter as given in the table, (63° 33′ 40″,) this will give the State House in 71° 0′ 56″, which confirms the longitude given in the table, from the observations of the members of the Philadelphian Society, &c.

17. GEORGE'S SHOAL and BANK.—(Pages 55—58.) George's Shoal and Bank have been admirably surveyed by Captain *Chas. Wilkes*, of the U. S. Navy, and the officers under his direction; as shown by the chart, on a large scale, published by order of the Navy Commissioners in 1837.

By this survey it appears that the general direction of the shoal ground is N.W. by N. and S.E. by S., and it extends 13 miles in length and from one to two miles in width; the depth of water within this space being 10 fathoms and less, but very irregular. The two shoalest places are between 41° 40′ 13″ and 41° 40′ 33″ N. and 67° 44′ 10″ and 67° 40′ 30″ W. and are knolls of hard sand, having upon them, at low tide, 15 feet of water. With the exception of these two places the shoal may be crossed in any part by an ordinary-sized vessel without danger. There is a rip usually the whole length of the shoal, and at times heavy breakers on the shoalest places.

The time of high water at the full and change of the moon is half past ten o'clock. The flood tide sets, first part N.N.W. latter part N. by E. by compass, and runs four hours and a half: the ebb sets first part S.S.E., latter part S. by W., and runs five hours and a half. Time in changing, including slack water, from half an hour to two hours. The rise and fall of the tide is seven feet.

The tide in changing always goes round from North to South by East, and from South to North by the West, or round with the sun. Greatest velocity of the current, 2 knots 6 fathoms. *Variation*, 8° 15′ W.

A comparison of the preceding with former descriptions, given hereafter, afford strong reasons for supposing that the shoals are continually in a shifting state.

18. NEW YORK.—The particulars on which the position of New York has been established, are given in the *Memoir on the Atlantic*, note 8, page 38. Mr. Simeon Dewitt, in his valuable Survey of the State of New York, 1802, gave the longitude of the city as 74° 3′ W. from Greenwich; 1° 6′ E. from Philadelphia, and 2° 54′ E. from Washington. Captain (since Sir John) Franklin, R.N., from his observations in 1825, gave the position of New York as 40° 42′ 7″ N., and 74° 1′ 15″ W. Variation at the same time, 1° 30′48″ W. The latter is generally assumed as 3° W.; and, upon mature consideration, we presume that the longitudes given in the Table are correct.

In September 1837, it was reported that a new channel had been found leading over the Bar into the Harbour of New York. "It lies to the east of the channel hitherto known and used, and is not far distant from the Long Island shore. It is of commodious width, averaging about a quarter of a mile, and saves three or four miles of the distance. But the great advantage which it presents is, that it allows entrance and departure from the port during the prevalence of winds which now forbid either. In tempestuous weather, when access

access by the channel hitherto used is impossible, vessels may enter by the newly-discovered one; and, anchoring in the Horse-shoe formed by Sandy Hook, Staten Island, and the New Jersey shore, may wait in safety for a pilot.

"The danger of an approach to the port is thus happily and greatly lessened. It is singular that, with such an immense commerce as is continually arriving and departing, the existence of so commodious an entrance should have remained unnoticed in our charts, and unknown to the most experienced navigators of these parts. It may be, however, that the advantages of this discovery will not extend to vessels of large burthen. We have been told that the water, in the shallowest part, is 17 feet at low tide." *New York Evening Post.*

19. NORRITON.—Norriton is an inland town, about 16 miles to the N.W. of Philadelphia, celebrated for the observatory of that excellent astronomer, Dr. David Rittenhouse. The longitude of this observatory was given in the Requisite Tables of 1781, as it now stands in our Table; and there is some reason for believing that it stands rather to the *eastward* than to the westward of this meridian: nevertheless, both in the English and French Tables, *subsequently* published, we find Norriton in 75° 28′ 30″ and 75° 33′ 45″. These results are recorded here for the satisfaction of future observers. In the observatory, near his mansion-house, Dr. Rittenhouse was interred, agreeably to his request, in June, 1796: and "here," says his brother philanthropist, Dr. Rush, "shall the philosophers of future ages resort to do homage to his tomb; and children, yet unborn, shall point to the dome which covers it, and exulting, say, '*There lies our Rittenhouse.*'"

20. CAPE HENRY.—The latitude of Cape Henry seems to have been very satisfactorily ascertained between 36° 56′ 15″ and 36° 56′ 45″; but the longitude is still deduced by means of the best maps and charts from that of Washington, as shown in the next note.

21. CITY OF WASHINGTON.—By an act of the House of Assembly of Pennsylvania, dated 19th of March, 1816, it was enacted that a new survey of that state, on a very large scale, should be made and published, under the orders of the surveyor-general: and it appears that, for this purpose, the longitude adopted by the surveyor-general, as the *true* longitude of Washington, is that given in our Table, which is 77° 0′ 20″ West from Greenwich. ~~We have adopted this on the presumption that it is grounded on some good authority, with the particulars of which we have not been so fortunate as to become acquainted.~~ Not long ago Washington was represented considerably more to the West; but its assumed position has progressively advanced from 77° 16′ to 77° 0′, ~~and it may, possibly, be less.~~ The longitude of the centre of the city, as deduced by Mr. Wm. Lambert, from a great number of observations made by him, and transmitted to the Astronomical Society of London, in 1822, is only 76° 55′ 30″ 45‴ West of Greenwich. ~~The~~ latitude of the same point, 38° 52′ 45″. ~~Should this longitude, hereafter, prove correct, (of which, at present, we may reasonably doubt,) the position of~~ Cape Henry, &c., must be adjusted accordingly.

~~If~~ Mr. Dewitt ~~be correct~~ in giving the difference between New York and Washington as 2° 54′, ~~(*see note* 18,) this will give the latter in 76° 57′ 00″.~~

22. ROANOKE NEW INLET.—It appears by the charts that there was formerly an inlet opposite to Roanoke Island, 3½ leagues to the northward of the *New Inlet*, but which is now grown up. The bar of the latter lies in the situation denoted by the Table, (35° 37′ N., and 75° 26′ W.) or very nearly so; and we perceive that, by an error in copying, it is unluckily mis-stated in page 118, which will, of course, be corrected by the courteous reader.

23. CHARLESTON.—(*See pages* 125—8.) In the report of Commissioners charged with the examination of harbours south of the Chesapeake, with a view to their comparative facilities, &c., dated February, 1837, it is stated that the Bar of the Harbour of Charleston is the main obstacle to its present usefulness as a naval station; for being deficient in depth of water, no vessels larger than sloops of water can pass, and they only at high tides, and with a smooth sea.

This Bar, which is of sand, forms an almost continuous chain of breakers, running nearly parallel with the coast, for 9 or 10 miles. The tides and freshes of the river have broken through this barrier, and four channels have been formed for the discharge of the waters. Three of them are now incapable of being navigated by large vessels, and the fourth, the main channel, is liable to great changes from heavy gales. Within twenty years this main channel has been entirely removed from its former site. It is displaced by more than

than half a mile; and where formerly passed in security ships of 17 and 18 feet draught of water, now rolls a dangerous breaker: but, in contemplating the possible obliteration of the present ship-channel by the deposit of some future gale, it may not be regarded as a lasting injury to the port; for it may be expected that a new, more convenient, and perhaps deeper, channel may be effected by obstructions in the tide-way, which shall guide to a given point, on the Bar, the vast and swift column of water composing its freshes and ebb. Such has been observed to be the action presented by a fortification now erecting in the river, which has already, though incomplete and not very extensive, caused, in the opinion of pilots, the overfall channel to be considerably deepened. The effect of so much power, directed on such an easily-moved substance as this bar, when aided by dredging machines, cannot be questioned. The noble harbour within, sufficient in every respect to accommodate a large fleet, and of the heaviest draught, the great seat of southern wealth and southern commerce, all seem to bespeak for it a generous expenditure of the national treasure. Charleston is now considered accessible with a draught of 17½ feet; but, with the aid of steam, a good tide, and smooth water, a ship drawing 18½ feet may be safely conducted. The average rise of the tide is six feet, which is increased or diminished by the violence and duration of the seaward or landward winds; and this rise and exterior influence is applicable to all the harbours of the Carolinas and Georgia.

CHARLESTON LIGHTHOUSE.—In our Memoir on the Atlantic Ocean we have stated the position of this lighthouse as 32° 40′ 49″ N. and 79° 52′ 0″ W. on the authority of Mr. Jas. Elford, a respectable mathematician of Charleston; but it appears, from recent documents, that this must be too far west; and we now assign longitude 79° 44′, or 79° 45′ only. Some years ago Mr. Jas. Finlaison, Mr. R. N., on effecting a passage in a King's ship from the southward, said, "In lat. 31° 34′, long. 79° 54′, soundings 20 fathoms, the current set us through at the rate of 3 miles an hour; steering from that N. ¼ W. to N.N.E., until we arrived at Charleston Bar, soundings regularly decreasing until we anchored in 6 fathoms off Charleston Bar, with the lighthouse bearing W. by N. 7 miles; Sullivan's Island N.W. ¼ W. 7 miles. The latitude and longitude where we anchored were as follow: lat. 32° 42′ N., long. 79° 46′ W., by mean of three chronometers. The tide is regular, and rises 7 feet. Variation 1° 30′ E. The soundings are regular from the anchorage to the distance of 90 miles, steering from E. ¼ N. to E. by N., from 6 fathoms to 36, when we left off sounding." Major Bache's Plan

24. PORT ROYAL SOUND and Harbour of BEAUFORT.—This port was surveyed by Lieut. Stockton in 1828. The SOUND (page 128) is sufficiently deep and capacious to accommodate the largest fleets, but like all the ports south of the Chesapeake, is impeded by a bar at its entrance. From the outer edge of the Bar, northwestward and northward to Beaufort, the distance is more than 20 miles. The Bar has an average depth of 17 feet, which permits, with a full tide, the passage of a frigate.

A bank, nearly a mile and a half long, from N.W. to S.E., and nearly dry at low water, prevents an access to the town of Beaufort, which stands on the east side of the river; but below it, to the south, the depths in mid-channel are from 1½ to 5 and 6 fathoms.

25. SAVANNA. (Page 129.) The Bar at the mouth of Savanna River is the deepest and most accessible of any on the Southern coast. The average depth is 19 feet at low water; and hence, with a full tide a frigate may pass in safety. But, although thus favored at the entrance, these advantages are soon lost in ascending the river. The first point of effectual defence, salubrity, and locality, for a navy yard is Cockspur Island, situate five miles within the bar, and two miles within the river; but a frigate cannot reach this point, by reason of an extensive sand-bank half a mile below it, on which but 14 feet at low water, can be obtained. In ascending still farther up the shoals are frequent, and have less water; and the river, at first brackish, becomes fresh; and hence being surrounded by marshes, it is in summer unhealthy. Lieut. Mercer's Plan

26. DOBOY or DARIEN.—(Page 130.) Merchant ships of heavy burden can enter the port of Darien; but it is unsuitable to naval purposes by reason of its unfavorable locality, being surrounded by swamps and morasses, having a fresh water river, and is, consequently unhealthy. The port can have no greater pretensions than the ingress of a sloop of war; and hence cannot compete with the deeper harbours in the same State of the Union.

27. St. SIMON'S and PORT of BRUNSWICK.—(Page 131.) The waters forming the port of Brunswick are generally designated *Turtle River;* an arm of the sea entering between St. Simon's and Jekyl islands, and flowing upward for more than twenty miles, thus forming a wide, deep, and rapid, stream. As no fresh water falls into this basin, rain excepted,

it is always salt, free from freshes and alluvial deposits; and hence, from an early period of time, no change whatever has been perceptible in the soundings or general character of the port.

From St. Simon's and Jekyl islands project extensive banks of sand, to the distance of six miles eastward. At low water, portions of them are laid bare; and, unless the sea be unusually smooth, they form, in nearly their whole extent, lines of continuous breakers. Between these lines of surf lies the channel, which is three quarters of a mile wide between the spit-heads, and which enlarges to a mile soon after entering. Between the spit-heads were found 22 feet at low water. Proceeding toward the land by traversing the whole breadth of the channel the soundings gradually shoalened to 18 feet, the least water found in the channel way.

At about one mile within the spit-heads is the *Middle Ground*, a bank of sand resting on the Jekyl or southern spit, and jutting about 200 fathoms into the channel-way; but leaving a passage of 18 feet, toward the St. Simon or northern spit, sufficiently wide for a large ship, even with an adverse wind. The Middle Ground has but 14 feet at low water. Entering still farther up, the soundings gradually become deeper; so that, when between the islands, it has an increased depth of 12 fathoms. The vessel is now in safety.

Here, on the right is St. Simon's Sound, which together with similar watercourses farther north, affords a safe internal navigation to steam-boats and craft to Savanna and Charleston. To the left is the arm of the sea, called Turtle River, from which by Jekyl and Cumberland Sounds, is a southern internal navigation to St. Mary's.

The course from sea to the mouth of the harbour is nearly W.N.W. keeping the northern breakers on board; the channel then runs south and southwesterly, and, making a short turn to the N.W. we arrive at the town of Brunswick; insignificant at present, but apparently destined, through her rail-road and canal, to future eminence; although a shoal of soft mud, close to and below the town, has over it but 12 feet at low water.

The average rise of the tide is six feet, which gives on the Bar, at high water, 24 feet, or sufficient for a frigate. The country hereabout is healthy.

Of the Harbours southward of the Chesapeake that of Brunswick is the most southern *frigate* harbour on the Atlantic sea-board, and has been pronounced to be the most eligible for the establishment of a naval dock-yard, by being so favorably placed near the great outlet of the commerce of the West Indies and of the Mexican Sea.

28. St. MARY'S.—The Harbour of St. Mary, on the southern frontier of Georgia, has a bar very similar to that of Charleston in its general features and depth of water; it is subject to the same vicissitudes from great gales. In twenty years the ship channel has been forced to the southward; and the site of the passage through which formerly passed the largest sloop of war is now filled up to 8 feet. Under the most favorable circumstances of wind and tide, the present ship-channel may be stated at 13 feet at low water. The average rise of the tide is 6 feet.

The particulars of the observations by Commissioner Ellicott, which have served for the longitudinal rectification of all the coast of Georgia, are given in the *Atlantic Memoir*.

SETTING OF THE TIDES ALONG SHORE, BETWEEN NEW YORK AND ST. AUGUSTIN.

From the west end of Long Island to Cape May	*Flood.*	W. by S.	*Ebb.*	E. by N.
Cape Henlopen to Cape Charles	..	S. by W.	..	N. by E.
Cape Charles to Cape Hatteras	..	S.S.W.	..	N.N.E.
Cape Hatteras to Cape Lookout	..	S.W. by W.	..	N.E. by E.
Cape Lookout to Cape Fear	..	S.W. by W.	..	N.E. by E.
Cape Fear to Cape Roman	..	W.S.W.	..	E.N.E.
Cape Roman to Charleston Harbour	..	W.S.W.	..	E.N.E.
Charleston Harbour to Tybee	..	W.S.W.	..	E.N.E.
Tybee to St. Simon's	..	S.S.W.	..	N.N.E.
St. Simon's to St. John's River	..	S. by W.	..	N. by E.
St. John's River to St. Augustin	..	South.	..	North.

Particular remarks on the tides will be found regularly incorporated in the text hereafter; as in pages 13, 25, 29, 30, 34, 36, &c.

29. FLORIDA KAYS AND REEFS.—In the modern charts, generally, the whole range of Martyrs, &c., have been represented three miles farther south than the latitudes given in the

the Table. Here the error, if realized, is on the safe side; but even in the later observations we find discordances. For instance, Biscayno Kay (given in the Table as in 25° 39′ 30″) is represented by one authority as high as 25° 43′ 30″; by another as 25° 41′ 10″. There are also variations in the longitudes; the one, *Captain Bauza*, gives the longitude of Bush Kay 82° 58′ 34″; the other, *Mr. Demayne*, in 82° 52′ 30″. Here, therefore, the surveyor has another expanse for rectification. See, upon this subject, the *Nautical Magazine*, No. 5, p. 230.

30. KAY WEST, APALACHÉ or St. Mark's, and APALACHICOLA. See the description of the Lighthouses hereafter, with which Sailing Directions are incorporated.

31. NEW ORLEANS.—In 1808, 9, Don Josef de Ferrer gave the longitude of New Orleans as 90° 9′ 45″; but later results give it less, and a mean of these is 90° 6′ 54″, say 90° 7′. So that this place may be considered as satisfactorily ascertained, as shown in the Atlantic Memoir.

32. The MEXICAN SEA.—"Vessels from Great Britain proceeding toward VERA CRUZ, TAMPICO, or other ports of the Mexican Sea, after running down the Trades, generally pass into the Caribbean Sea from the Windward Islands; the clearest and most direct route being that between Antigua and Guadaloupe, passing on either side of Montserrat, and thence pursuing a course off the southern coast of Hayti toward Jamaica. The route will now be along the north shore of the latter, and passing the S.W. end of the Grand Cayman, you enter the Gulf between Cape Antonio and the shore of Yucatan. These remarks refer to vessels navigating by chronometers, which every vessel ought to have.

In the fine season, from March to October, vessels may shape a course from the S.W. end of the Cayman to enter on the Campeché Bank, not far from the Yucatan shore: for, by going over toward Cape Antonio the distance is lengthened and the passage may be retarded by the current setting to the southeastward, as shown in the Directory.* In the season of the Norths (October to March) a more northerly course may be steered, in order to keep the vessel to windward in the event of a norther coming on. The inset into the Gulf, through the Channel of Yucatan, is generally found setting from 16 to 24 miles in the 24 hours, and more than 30 miles have been found.

If bound to Vera Cruz or other port to the southward, a course may be shaped to pass about 20 miles to the southward of the Alacranes, or near the parallel of 22° 0′. On this course you will be enabled, in the event of a norther, to pursue your passage, carrying moderate press of sail, and edging away to leeward if requisite.

If bound to *Campeché* or *Laguna de Terminos* you may sight the land off Sisal, pass *inside* the Sisal Shoal, and when round Point Piedras steer along shore in a convenient depth of water.

If bound to Vera Cruz the best and clearest passage off the Bank is between the *Baxo Nuevo* and the *Triangle*. If in the season of the Norths, a course may then be shaped for *Point Delgada*, which is 15 leagues N.N.W.ward from Vera Cruz; so that, should a norther prevent your running down for the port, you may be enabled to keep to the windward of it.

In the event of being caught in a norther in the vicinity of the Campeché Bank, the navigator has hitherto been recommended to run on to the bank for smoother water, or to bring up in a convenient depth; but this may mislead the inexperienced; the writer having invariably found a more dangerous, short, and unequal, sea on the Bank in a gale than off it; and bringing up, except in one particular place, would, in most cases, cause the loss of anchors and cables, if not the vessel. The one place, where vessels may bring up with safety in a norther, is on the long and equal flat, or shoal, in the vicinity of the town of Campeché: for, any where between Jaina, to the northward, and Jampotan, to the southward, you may ride in the greatest safety, bringing up in a convenient draught of water. We have anchored on this bank in December and January, during very severe norths, and never had any great strain on the cables. The water also was very smooth.

In running for Vera Cruz, from the fairway between the Baxo Nuevo and Triangle, in all seasons, keep well to the northward, but particularly in the season of the Norths, as the currents are generally strong and their direction uncertain. Steer toward Point Delgada, keeping a strict watch on the weather.

With the assistance of the barometer the approach of a norther may generally be known, the mercury falling two tenths of an inch, or to about 29·80, twelve or fifteen hours previous

* See Volume II., pages 96, 174, and 175.

to its commencement. So soon as the norther sets in, the barometer begins to rise and generally attains 30·20 or 30·30. The falling of the mercury and a very light wind, generally from the southward, with a light mist or haze on the horizon, are pretty sure indications of a gale. Previous to the commencement of the gale the current generally runs to the northward; after its commencement, to the southward. These currents are strong, and have caused some melancholy losses.

When running down for the coast, great care ought to be taken in order to gain observations for latitude as often as possible. Do not rest contented with the sun's meridian altitude, but ascertain your latitude from the planets, fixed stars, or moon, as often as possible.

If a norther commences when you are approaching the coast, and you are at a sufficient distance to windward, keep as much sail as you can on the vessel, and make short tacks, so that, on the gale's decreasing you may be able to gain the harbour previous to the commencement of another. Vessels standing out, during the strength of a norther, on one tack, are at such a distance off that they cannot reach the anchorage before another. Vessels have been ten days knocking about on this account, after having been in sight of the coast immediately to windward of Vera Cruz. Previous to the commencement of a gale the high lands to windward of Vera Cruz will be plainly seen, particularly the snow-capped peak of Orizaba, the Cofre de Perote, and the volcanic mount of Tuxtla.

In running down for the port, from a position to windward, take care not to get too far to leeward, a case which has happened to many strangers from erroneous calculations of the distance of the high land, and brought them in danger of the reefs. The coast in the immediate neighbourhood of the city is very indistinct, being a range of low sandhills. By keeping a good lookout from the masthead, the shore, when once seen, is easily kept sight of, the spires and lighthouse being very conspicuous.

Avoid running down for the Light by *night*, for in every season this is dangerous; but the light is a good guide should you be close to the fort before dark and cannot enter, as it enables you to keep the vessel in a proper position till morning.

Between the northers, in their season, and in the fine season the land and sea breezes are moderately regular on the coast, the former coming off from the westward shortly after sunset, and giving place to the sea-breeze at 9 or 10 *a. m.* The land wind is, in general, very light. If, in running toward the harbour with the castle in sight, and with the sea-breeze, it is seldom so far to the northward as to permit your entering by the northern channel between the castle and Punta Gorda. You must keep on the larboard tack till you see the Blanquilla Reef. So soon as this is observed steer directly toward it, until about two cables' length distant, then keep away between it and the reef on which the castle is built, keeping about a cable's length from it: no danger can arise, as you can easily see the channels. In the event of its falling calm, you can always let go an anchor, taking care, however, to warp into the harbour as early as possible. The pilots come out to a very short distance, seldom going outside the reefs; and when on board they are of little service, as they know nothing of working a vessel; they will merely point out a position for anchoring.

In the season of the Norths not a moment should be lost in securing your vessel. In the fine season moor with two bowers, one N.W. and the other S.E.; in the season of the northers, moor with two bowers ahead to the north, taking great care that your anchors are clear. Pay out a long scope of cable, then carry out your stream anchor as far as your hawser will reach to the S.E., and heave it taut, send down topgallant masts and yards, and see all clear to house your topmasts. Take care to hoist up your boats also every evening, and give your long boat, if out, a good scope of painter. There is seldom time to make any preparation after the norther commences. On getting into a berth, endeavour to get your anchors as close to the reef as you conveniently can. There are rings in the castle wall, to which former directions recommend your mooring, but most of these are now broken, and the remainder so decayed as not to be trusted.

Accidents have frequently occurred in the harbour from carelessness in mooring. Never on any account trust the pilot to moor your vessel in this harbour: see to it yourself; see your anchors well stocked, (if iron stocks,) and every thing complete previous to coming-to. If the vessel once starts, there is no room again to bring up, as the breakers are close astern.

Should you enter the harbour with the breeze from the E.S.E. or eastward, and let go your anchor, always take care to weigh this anchor before you moor, as the vessel swinging to the E.S.E. breeze, would be sure to give you a foul anchor, if you merely haul her stern round. Yet we have actually seen a man, calling himself a seaman, do this; the consequence

quence was, no sooner did a light norther commence blowing than the anchors came home, and had one of them fortunately not hooked the anchor of another vessel, his would certainly have gone ashore.

In Vera Cruz there is very little trouble with cargo, as the custom-house has excellent lighters for discharging. Vessels going to Vera Cruz with the intention of afterward proceeding eastward, along the coast, to *Laguna de Terminos*, should endeavour to bring as much ballast with them as possible, as it is very expensive; a lighter-load, which they called twenty tons, though considerably less, costing 55 dollars. ("*Mexicano*," in the *Nautical Magazine*, August, 1838.)

Mr. Henry Davy, in his important communication to the Nautical Magazine, May 1839, has remarked that few countries possess such advantage for seamen as Mexico in its magnificent and well defined mountains. These unerring guides to the navigator are visible in clear weather at great distances from the land; and, when first seen, excite his surprise and admiration. They must particularly interest him, as a reference to the chart is sufficient to direct him to the anchorage. The appearance of the land is a mountainous ridge, of which Orizaba, Perote, and Villa Rica, form the grand elevations. *Orizaba*, the great giant of the chain,* is a conical mountain, whose apex is capped in perpetual snow; it is estimated at 17,786 feet above the level of the sea, is 60 miles inland, and may be seen from seaward at the distance of 120. One half of this majestic mountain, with its beautiful white top, appears above the ridge with Perote to the right and Villa-rica on its left. The Cofre de Perote, of a less height, and 30 miles to the northward, is an immense mass of mountain, with a small indent at its summit, (*see page* 162) and snow is very seldom seen upon it. The other high lands are the lesser hills in the vicinity of Point Delgada; and, at about ten leagues southeastward of Vera Cruz are the mountains of *St. Martin*, of which the Volcano of *Tuxtla* is the highest. On the parallel of Vera Cruz, or having been driven to the southward, Tuxtla will be easily made out.

Should the high lands be hidden, which is frequently the case, particularly in the months of February, March, and April, it will be necessary to pay strict attention to the lead; shoaling the water will give notice of approaching the shoals off Anton Lizardo.

The immediate sea-coast from Point Gorda to a considerable distance southward is low and steril, with small sand-hills partially covered with verdure. Over Point Mocambo,† is a little dark hill forming a saddle, and close by, near another hill, is a single tree; these are excellent marks for Sacrificios, and will often be seen before the castle or city come in sight.

In letters from Vera Cruz by Mr. Henry Tudor, we find the following passages descriptive of his route to Vera Cruz, which may be compared with those given in pages 162, 3.

"On the fourth day after leaving Yucatan, (Febr. 14,) we came in sight of the splendid scenery that characterizes the sea-coast of the province of Vera Cruz; or, to speak more correctly, which forms the back ground of that district. The sun had just risen, and the noble mountain peak of Orizaba, elevated to the lofty altitude of 17,786 feet above the sea, shone with a resplendent brightness, perfectly enchanting. Its extreme snowy whiteness, united with its vast height, was such as to deceive even the practised eyes of the captain himself. It was pronounced to be a cloud; till, unchanging as it remained, amid the gradually ascending masses of vapour that encircled its base and higher regions, as well as concealed a chain of mountains in its vicinity, we were convinced of our mistake. In a short time this misty veil was withdrawn altogether, when a magnificent array and outline of peaks and ridges was exhibited, on which the sun was pouring down a flood of rosy light that I never saw exceeded, if equalled, even in Switzerland. We now beheld the Cofre de Perote, and the line of the Sierra de Zampoala, forming a brilliant semi-circular sweep, and terminating with the shores of the Gulf. To these were superadded minor ridges and elevations occupying the fore-ground, thrown into the most fanciful and romantic shapes, which diversified, *ad infinitum*, the general effect; the extremity of the chain on each side curving downward with a waving but gentle declination. The abstract beauty of this grand mountain landscape required no addition to set it off; but when contrasted with the flat and tame character of the coast of Yucatan, that we had just left behind us, it increased, by comparison, the highly pleasurable emotions we experienced.

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* See pages 162, 163, hereafter.

† Three miles southeastward from the castle of S. Juan de Ulua.

These huge mountains seemed to stand like the mighty portals of some mysterious region; the guardian giants of some happy valley beyond, where all is peace."*

The city of Vera Cruz is a fortified and well-built place, as described hereafter, with wide streets, handsome churches, and good markets, shops, &c. The barracks extensive, but these together with the churches, &c., have been much damaged by the firing of the French. For a time the place will remain a picture of desolation, reminding one of the city of the dead. The savage and wanton continuance of the attack, when the city had become *defenceless*, can never be forgotten, nor the retributive justice subsequently inflicted on the aggressors by the climate.

At six miles from the city the country improves rapidly, and extensive plains appear, studded with groupes of trees and covered with herds of cattle.

The castle of S. Juan de Ulua has been a place of great strength, but had been allowed, previous to the late hostilities with France, to fall into a ruinous and disgraceful state. The building is formed of decomposed coral, which appears, by the battering of the French, to have fallen away in masses; the guns were thickly coated with rust, honey-combed, useless, and mounted on rotten wooden carriages, which in some instances, fell to pieces from the concussion caused by the firing; the shot were generally too small for the guns, and the powder so bad, that the shot were spent when they reached the frigates.

Sacrificios.—This islet, described in pages 165, 166, could formerly be distinguished by its having several buildings and being covered with high cane trees, but all have been levelled, and it now appears as merely a very low barren spot. From this isle the city bears N.W. by W. ½ W. 3½ miles. In order to take an anchorage here, after steering in toward the shoals, and having made out the city, castle, &c., it will be requisite to determine, by the direction of the wind, which way to approach the desired spot. The channels between the Gallega and Blanquilla reefs, between the Isla Verde and Pajaros, are those most in use, and have been found equally clear and safe for any class of ships.

On making the reefs, Isle Verde, which at all times shows very white, will first present itself, and if it be decided to go south of the shoals, steer for it, leaving it at any convenient distance to starboard, also Pajaros, and approach Sacrificios boldly: at 100 yards from its reef are 8 and 7 fathoms of water; round the south point at that distance, and anchor close up under the lee of the reefs, the nearer the better, as a hawser will always steady the ship astern. The bottom is excellent holding ground, and during the *North* there is greater protection and smoother water.

The deepest water is in a line between the south point of Sacrificios and Point Mocambo: within a cable's length of the point is a depth of 10 fathoms, thence 10 to near mid-channel, when the city will be shut in by Point Hornos; from this 9, 8, and a gradual decrease to 5 and 4 fathoms, toward Mocambo: from this line of soundings the water shoalens to 8, 7, and 6, fathoms, throughout the anchorage. This place is perfectly clear, and the largest class of ships may work in or out, observing to tack at the first cast in 5 fathoms. Even inshore of this the bottom has a gradual ascent, the depths of water being 5, 4, 3, and so on. At this time 22 vessels were safely moored here, and it is a much more secure place than usually considered.

At all times, either with the trade-wind or during the Northers, a heavy swell sets toward Point Mocambo, and more or less on the whole coast of the main land.

Other Anchorages.—The anchorage at the *Isle Verde* is very good; and, during the fine season, temporary stopping places can be found under the lee of any of the reefs, and on the coast between Sacrificios and Anton Lizardo. If night, calms, or other causes, should prevent reaching the port, I would recommend bringing up, if possible, which is much preferable to risk being driven about by uncertain currents.

Tide and Currents.—The rise and fall of *tide* is from 2 feet 9 inches to 4 feet 3 inches; it mostly occurs only once in the 24 hours, and causes no perceptible stream.

The *currents* appear to be driven from whichever point the wind blows; in-shore it is northerly or southerly along the coast from one half to two knots, according to the strength and duration of the breeze. During the *North* the current is generally strong to the southward, and turns again northerly so soon as it is over. At times it changes its direction within an hour after the wind, and at other times the change appears almost simultaneous. The currents are much stronger near Vera Cruz and at the bottom of the Gulf than farther to the northward.

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* Two beautiful views of the Peak of Orizaba and the Castle of S. Juan, annexed to the preceding description, are given in the *Nautical Magazine*, March, 1836.

THE WINDS.—Throughout the year, except during the season of the Northers, which is from October to March, there are no winds higher than No. 6: calms, light land airs, and moderate sea-breezes prevail. During the North Monsoon, which in some years may be a month earlier or later, the winds are to the south-eastward between the Norths.

The Norths in the upper parts of the Gulf are more favorable to navigation than otherwise, either in proceeding to the southward or to the eastward. Their general strength is No. 9 to No. 6, and it is on the Campeché Bank and on a lee-shore near Vera Cruz on the coast that they become formidable. The means of the barometer, during this season, are from 30·0 to 30·10; some hours before a North, it falls to about 29·8, and will remain steady for several hours, when it will begin to rise rapidly: at such time look out for a North."

During the fortnight that H.M.S. *Cornwallis* remained at Sacrificios, in December 1838, and January 1839, the thermometer ranging from 68° to 74°, the temperature of the water was 73°; barometer meaning 30·10; no norther, which is extraordinary, the season having been altogether free of them, with the exception of one or two very moderate ones. One of the signs of a norther coming on, is, the high lands being visible: they were perfectly so all the time we were on the coast, and each morning the snowy top of Orizaba, with the tints imparted from the rising sun, met our early gaze: it was a lovely sight, so tranquil, yet so grand.

33. TEXAS and GALVESTON BAY.—It has been predicted, and the present condition of this country seems to justify the prediction, that the new state and vast region, called TEXAS or TEJAS, will soon be covered with the finest plantations of cotton in the world. The population is very rapidly increasing, and its commerce will necessarily be great.* The principal port or harbour is that called GALVESTON BAY, described in page 180 hereafter.

The N.W. shores of the Mexican sea, from want of a regular survey, are very imperfectly represented in the charts; and there yet remains, even in some of modern date, an error of no less than a degree of longitude between the River Atchafalaya and the Lagoon of Santander. The description of Galveston Bay, given from the Spanish 'Derrotero,' also requires some correction.

A particular plan of Galveston Harbour was published in 1838; it is evidently imperfect and in want of a scale, but it presents the form of the *gulf*, for such it is, more exactly than any heretofore. According to this plan, the north point of the entrance, formerly *Arcokisas*, now bears the name of the late respected General *Bolivar*, and the south point, *Culebras*, is distinguished by a small fort on the N.E. extremity of Galveston Island. Between the two points, the bar, extending outward about four miles, is broken by five narrow passes, of which the best is the second from the southward, and has from 12 to 16 feet of water; this pass extends in a N.W. direction, and leads up to the fort, above which the depth increases, to the south side of Point Bolivar, in 24 and 30 feet of water, where there is good anchorage and shelter from a northerly gale. There is likewise anchorage within the fort point, on the south side, sheltered from the east and S.E.

The gulf within is divided into nearly two equal parts, north and south, by a chain of low islets, extending nearly East and West, between which there is only one passage into the upper part of the gulf: this is toward the west, and has only 5 and 6 feet of water. In the portion of the gulf to the southward of this bar, the depths in the channel are 9 and 10 feet, but to the northward 12 and 16 feet, bounded by shoals on either side.

S. Luis or Galveston Island is described as about 20 miles long, trending N.E. and S.W.; it is low, but may be known by three single trees about the middle of it: at the west end is a wide pass with a small island nearly in the middle of it, and at the back of it, about seven miles distant, is a long grove, called *Oyster* and *Chocolate dye Wood*.

34. RIO DEL NORTE.—Few vessels enter the *Rio del Norte*, the trade to the inland town of *Matamoras* being carried on through the *Barra de Santiago*, three leagues farther northward, which has a depth of 9 to 12 feet over it, while the river has only 5 and 6 feet.

The *Barra de Santiago* lies in latitude 26° 3′, longitude 97° 25′. In running down for this place between the months of March and September, be careful to keep to the south of the parallel of 26°; for, should you fall in to the southward of the Bar, you will find it very easy to make your northing, as a continued current is running northerly, of from two to three miles an hour. Should you fall in with the land, not having had a previous observation to ascertain whether you are to the north or south of the Bar, by going to the

* See the '*Morning Chronicle*,' of August 28, 1839.

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mast-head, you will see, if you are to the northward, a large lagoon of water, though scarcely able to see the main land.

This lagoon, the *Laguna de Santander*, extends to the north of latitude 28° 30′, and will be a certain sign of your being to the northward. If you are to the south of the river Bravo, you will find the water of a muddy green colour, and no lake to be seen on the inside from the mast-head. If in the vicinity of the river, the water will be similar to that on approaching the Missisipi. If you fall in between the river and the Barra Santiago, you may discern a large house standing on an eminence at the entrance of *Boca Chico*, a little narrow inlet five miles south of the Barra or Brazo. Those bound to this place, between September and March, will do well to keep as near the 26th degree of latitude as possible, the current being then altogether governed by the winds. With the exception of an easterly or northerly wind the current is northerly.

SIGNALS.—A *white flag* will signify that a vessel cannot enter, and will never be shown unless there is danger in entering, and it will be hauled down when the danger ceases.

A *Red flag* will be hoisted to require your draught of water, which you can answer by hoisting your flag as many times as your vessel draws feet of water.

A *Blue flag* will tell you that the pilot is coming to take you in; or if you draw too much water, and will have to lighten.

A *White and Red flag* will be hoisted as a signal for you to anchor, with two flags in a range and in 4 or 5 fathoms of water, and a lighter will be sent out to you immediately.

A *White and Blue flag* signifies that you may fall off for the night, it being too late to enter, but you will be attended to in the morning.

Any vessel attending off the harbour in distress will be promptly attended to on making the usual signal, viz. the ensign union down. I would recommend a white square flag with a large black ball in the centre, as a signal much quicker discerned.

Thos. M. Thompson, Branch Pilot.

35. TAMPICO, &c.—The Bar and Port of Tampico are described in pages 176, 177, and a subsequent description states that the depth of water on the Bar never exceeds 13 or 14 feet, and this reduced to 8 or 10 in the rainy season. The difference arises from the accumulation of sand, brought down by the rapid descent of water from the mountains, where it is stopped by the bar; and the latter, owing to the displacement of its sands, being subject to continual change, has no constant depth. The pilots examine it every morning, as the channel is rarely stationary for more than two or three days. The rise of tide does not exceed two feet. H. W. at 2 h. 30 m., but much varied with the wind. *Variation* 8¼ E.

The following Directions for the coast between the Isle Lobos and Tampico, by Mr. *P. Masters*, commander of the *Marinero* of Tampico, were first given, with a chart of the river, in the *Nautical Magazine*, January, 1834.

"A ship, in making the land, or running to the westward, being to the northward of Cape ROXO, will find no danger; but, if uncertain of her latitude, it would be adviseable to insure making the land to the north of it, if possible, as the water there is deep, 20 to 24 fathoms being found at the distance of about two miles from the shore to the southward of *Tampico el Alto*. As it generally happens after a norther has set in, that the atmosphere is thick, and as the surf near the shore tends to increase the difficulty of seeing objects used as land-marks, it must be remembered that, from Cape Roxo the land trends about S.S.W. toward the Bar of *Tanguijo*, and from Cape Roxo to the northward, as far as the Bar of *Tampico*, it trends nearly N.W. by W.

From about half a mile to three-quarters of a mile north of Cape Roxo, the tops of the sand-hills first appear covered with trees or bushes. These extend along the whole line of coast to the southward without interruption. The north end of the high land of San Juan, from the above position, then bears S. 30° W. (by compass) and the southern part of the low land of San Juan, S. 22½° W.; the centre of high land, S. 25° W.; which high land is formed by several ridges extending in different directions. Farther north, for about two miles, the whole of the sand-hills are interspersed only with a few bushes between their tops and the beach; and to the northward, about four miles from Cape Roxo, is another portion of sandhills, with their tops covered with bushes, about half a mile, or less, in length. From the last mentioned place to the northward is almost a continuation of bushes, about one-third from the beach, the tops of the sand-hills being clear of vegetation.

Navigators should here be careful to make allowance for *refraction*, which, as it is a sandy coast, is very great when the weather is fair, making the bushes at times appear higher than they really are; but should even this be the case, if the tops of the sand-hills be clear, the ship is then to the northward of Cape Roxo at least four miles. Should she be

be farther northward, it will be seen if the tops of the sand-hills are clear of bushes; if not, she must be between the rising ground of *Point Jerez* and *Tampico el Alto*. The whole line of coast from Point Jerez to the Bar of Tampico is covered with bushes.

Should a ship be disabled, or in want of water, or even provisions, and a norther comes on whilst off the Bar of Tampico, when all communication from the shore will be cut off by the heavy sea on the bar, it would be adviseable to bear up for the *Isle de Lobos*, (which affords a very good shelter,) provided there be an appearance of the gale's lasting, in preference to running on soundings and lying to the wind; for so soon as the weather is favorable, a vessel has more chance of reaching the anchorage off the Bar of Tampico from Isla de Lobos, than if she had kept the sea, the current always setting strong to the southward during a norther.

With respect to water on the Isla de Lobos,—there are two wells on its south side, in one of which I found 14 inches. The quality of it was very good, and better than could be expected on such a small isle. Lobos is also covered with trees, some of which are of a very large size; and fish are in abundance near the shore. But attention must be paid in getting into the anchorage; although every danger with regard to the ship may be seen, yet the anchors may be lost, as in some parts the bottom is very foul. The *Flecha* of Tampico ran in to leeward of this island, (the wind being to the northward,) and lost two anchors; but the last time, the captain had an opportunity of sounding round the reefs and about the anchorage; and by the information I received, and the observations I made, the following statement is, I think, correct.

The Isla de Lobos is in latitude 21° 30′; it is low, and formed by a coral reef and sand, but covered thickly with trees, the tops of which are about 35 feet above the level of the sea. The isle is about three-quarters of a mile in diameter, and nearly round, decreasing a little in height toward the N.W. From the western part a narrow reef extends to about a cable's length. To the northward is another, or rather a continuation of the same reef, which extends about two miles from the isle. The latter reef, in day time, can always be distinguished by the sea breaking over its outer edge. Its eastern edge extends about S.S.E. and N.N.W. until the southern part of the island bears about W.S.W., and extends about three-quarters of a mile from it.

In running for the Isla de Lobos from the northward, having made the land north of Cape Roxo, and stood in until the distance from it is about two or three miles, steer S.E. ½ E.; and, when off Cape Roxo, unless the weather be very thick, the Isla de Lobos may be seen from the foreyard. Having made the island, the best guide to clear the N.E. and eastern reefs is a good lookout from aloft, there being no danger but what may be clearly seen. When the isle bears about West or W. by N., haul up to the southward and westward, round the south part of the reef, for the anchorage, keeping in not less than seven fathoms of water, which will be about a cable's length from the edge of the reef. When crossing a ledge which extends a little to the southward of it, the eastern part of the island will bear about N.W. by N. and hence the centre of the island bears about N.N.W. The ground is very foul, and should be particularly avoided as an anchorage, although it appears to offer good shelter from a norther and from the sea.

The best anchorage is when the centre of the isle bears about North or N. by E. in from 7 to 8 fathoms of water, which will be about three cables' length from the shore, on a sandy bottom. This is an excellent berth for catching fish in, and it has the least swell during a norther. When the centre of the island bears about N. by W., from a depth of 9 to 11½ fathoms, the bottom is sandy, with a few stones. Eastward of this bearing to the shore, the ground is very foul. It would not be adviseable to anchor nearer the island than in 7 fathoms of water, for, should the wind shift to the westward, southward, or S.E., (which makes this anchorage bad,) there would then be sufficient room to get under way, and clear the reefs either to the eastward or westward of the isle. Neither would it be prudent for a stranger, in getting under way in the night, to pass to the westward of the isle, as the currents are so changeable that the ship might be on shore on the *Baxo del Medio* or *Blanquilla*, when it might be supposed that she was at some distance from them. I am informed that the depth of water can be no guide in approaching either of these sand-banks, they having 7 fathoms close to them. But supposing the wind to shift to the southward during the night, and blow strong, so that a vessel could not clear the eastern part of the reef, and was obliged to go to the westward of the isle, after having rounded the western reef, which extends from the isle as already mentioned, the coast should be dealt with in preference to approaching Blanquilla.

Blanquilla bears from Isla de Lobos about N.W. by W., distance four miles. Cape Roxo bears from the Isla de Lobos N.W. ¼ W. nearly, about 8½ miles. The south end

of the high land of San Juan from Lobos bears S. 61° W., and the northern part of the high land of San Juan from the same S. 71° W. (by compass.) From off the bar of Tampico, in 7 fathoms, the centre of San Juan bears S. 4½° E.

Between the northern reef of Isla de Lobos and Blanquilla is a sand-bank, *Baxo del Medio*, over which the sea breaks. It is mentioned, in some books of directions, that Blanquilla is an island; but this is not the case, for, when I passed it, which was three days after a norther, and there had only been a light breeze from the N.E. by day, and the wind off the land by night, of course there could not have been any swell of consequence at the time, but what there was broke entirely over Blanquilla as well as the Baxo del Medio: the former appeared about half a mile in diameter, and Baxo del Medio about a cable's length.

From Cape Roxo the centre of the high land of San Juan bears S. ¾ W. (by compass), and when off shore about 2½ miles, there is about 24 fathoms of water, with fine sand: the Isla de Lobos then bears S. 38° E., three leagues, and can be seen from a little above the deck.

In sailing for the Bar of Tampico, the best guide is a good observation. A vessel should run down in 22° 16′ N., its parallel of latitude, provided she be tolerably near the land; but it should be remembered that, if a norther had been blowing strong a day or two previous, the current will be setting to the southward as much as two miles an hour, and then, of course, the land should be made a few miles to the northward of the bar. But the contrary should be observed if the wind had been blowing from the southward or S.E., as the current will be then setting to the northward with nearly the same velocity, and of course the land should be made to the southward; but no opportunity should be lost in ascertaining the latitude of the ship, either by the pole star or any other mean, when approaching the land in the night; and the lead should be attended to if the vessel be going fast through the water.

Having gained soundings in about 40 fathoms, which is near the outer edge, you will then be from four to five leagues from the coast. Should the weather be moderate, you may stand in for the land in from 9 to 12 fathoms, and must keep off and on until daylight, in about the same soundings: the distance from shore about three or four miles.

When near the Bar of Tampico, you will know that you are off it by the bottom of soft blue mud, without sand, on which you may anchor with perfect safety, in from 9 to 10 fathoms of water, until daylight, or till the sea-breeze sets in, when the vessel can be placed in a good position, either for passing the bar or discharging her cargo outside if requisite. The deepest water I have found at the bar was 14 feet: this was only on one occasion, and after heavy northers; but generally there is from 9 to 10½ feet, except in the rainy season, when there is less.

Many strangers have been deceived in making the coast in consequence of mis-directions for making the Bar. The land, instead of being sand-hills, as stated, to the southward of the Bar of Tampico, is a regular range of land, which at the highest part is about 350 feet above the sea, and covered thickly with trees, excepting two small patches. It decreases in height more toward the Bar of Tampico than to the southward.

The land near the Bar is lower than on any other part of the coast, and to a stranger is difficult to make. The mark for the Bar is a white house to the southward of its entrance. If the vessel be about a mile to the northward of the bar, two houses may be seen on the south side of the river. On the north side are three houses or huts, and on each side is a *vigia* or look-out. That on the north side signalizes to the town of Tamaulipas. Both of the vigias [*Miras*] have an appearance from the offing like ship's masts. It must not be forgotten that there are neither houses nor look-outs to be seen on any other part of the coast near tbe Bar.

It has been erroneously stated that Tampico el Alto or *Tampico*, so called, can be easily distinguished; but, unless a vessel be close in-shore and nearly abreast of it, Tampico cannot be seen, as the land about it is higher than any buildings in it. The situation of Tampico is in a hollow, and from this the land to the southward begins to decrease in height.

At about one mile and a half to the northward of Tampico el Alto, and five or six miles to the southward of the bar, on the highest part of the land, is a remarkable tree, which is very large and high. This tree may be distinguished from the offing nearly as soon as the land may be seen.

To the northward of the Bar of Tampico, the bottom is of mud mixed with sand, but to the southward fine sand, except off Point Xerez or Jerez, where, for a small distance, the bottom is the same as to the northward of the bar, mud and sand. The coast north of the bar is formed of sand-hills for several miles. These are partly covered with bushes; but

but the two high hills of *Mecate* and *Matanzas* are good land-marks, both being near the coast, and in general may be seen from the bar. To the southward there are no such hills.

The river from Tampico is navigable for vessels as far as Panuco, which is about 75 miles up from its entrance, and in the shallowest part has a depth of 9½ feet.

Effect of Refraction.—"I have observed, in taking the altitudes of objects at night North of the Zenith, when approaching the land, (particularly in low latitudes,) that the Latitude has differed considerably from the ship's actual place; and, also, when the altitudes of objects south of the Zenith have been taken at the same time, the error has been the contrary way. This must be attributed to the effects of refraction; but as the horizon might likewise be raised or depressed by the fogs or vapours which hang near land, independent of refraction, and no calculation can be made for it, I have always found that, by taking the altitudes of two objects, the one north and the other south of the zenith, the mean of the results has been nearly the correct latitude." P. M.

It was reported, in 1834, that a company in Tampico were taking measures for procuring steam-boats for the purpose of towing vessels over the bar at the mouth of the river, several having, at times, been detained for weeks from not being able to get over the bar.

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36. VERA CRUZ.—Some instructive notices relative to Vera Cruz may be seen under the title of 'Nautical Rambles,' in the 'Nautical Magaznie' for August, 1839. See, also, the preceding Note, 32, pp. xxvii—xxix, and the Note 39 hereafter, page xxxvii.

37. ANTON LIZARDO.—(*See page* 160.) H.M.S. *Edinburgh* was one of the squadron which visited this place in December, 1838; and *Mr. Davis*, the master, then composed the following directions;—

"Ships coming in from the northward must not approach the western side of the outer reefs nearer than in 27 fathoms until within six miles of the land. They should then pass the inner reefs in 16 to 18 fathoms, and endeavour as soon as possible, to gain sight of the *Isla Blanquilla*. This isle, which forms the western entrance, is of sand, and so low that, from the northward, it is not easily distinguishable from the main. The low Point *del Collot** cannot be mistaken, as it is the south point of the anchorage; and when it bears S. 40° E. Blanquilla will be seen open of the point; approach this isle no nearer than three quarters of a mile, while to the N.W. of it, until it bears E.N.E. ¼ E., when the isle *Medio* to the eastward will be on with it; and, when Medio opens to the southward haul in, E.S.E., passing Blanquilla at two cables' distance, which isle must not be brought to the westward of W. by N. until you are three quarters of a mile to the eastward of it; then haul more to the northward, and anchor where convenient in 8, 10, 12, or 14, fathoms, good holding ground.

"The Reefs to the northward are all visible, particularly at low water, and of themselves afford sufficient guide to prevent approaching too near.

"*Should the wind be from the eastward*, and the ship working in, be careful in standing toward the shore to tack immediately at the first cast in 9 fathoms, as the shore is very steep, 7, 5, and 3, fathoms, as fast as a man can heave from a boat. It is also adviseable not to carry more sail than will allow the leadsman to gain correct soundings; the lead must be kept going quickly. By attending to the above directions the largest ship may be safely worked in; should night be coming on and prevent getting as far as wished, still the second tack will reach a berth safe from a norther.

"The Edinburgh's position of Blanquilla is, lat. 19° 5′ 15″, long. 95° 58′ 5″. The tide rises from 3 to 3½ and at times near 4 feet.

"Anton Lizardo is undoubtedly the most capacious, sheltered, and safest, anchorage of the Mexican coast in this sea; its great drawbacks are want of supplies, no water, and distance from the city of Vera Cruz, which is 15 miles. Fish are abundant."

When Anton Lizardo bears S.W. by S. 12 miles, Villa Rica will form the back ground, all the coast-land looking very low; the outer reefs very distinct and appearing to front the shipping in a continuous line of black rocky heads, fields of gulf-weed, numerous pelicans and others, with quantities of fish in their vicinity. The island Jopatillo, on one of the

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* A mile and three-quarters to the S.E. from the Point of Anton Lizardo.

eastern

eastern reefs, is an excellent object to guide clear of them: it is very small and quite bare. When it bears south, six miles, steer with Orizaba a point on the starboard bow, and as from that position Sacrificios will scarcely be discernible, it will lead to the south end of the island. (*H. Davy.*)

38. VERA CRUZ to the Laguna de Terminos or Laguna.—

On leaving Vera Cruz for Laguna, in the fine season, so soon as you are clear of the reefs, you can take advantage of the land and sea-breezes, and beat up along shore, taking care to give the reefs off Point Anton Lizardo a good berth: your lead is afterward a sufficient guide. Having advanced as far as Chiltepeque or Tabasco, you may often find a strong current running along shore to the northward; and,* in order to avoid being driven to leeward with it, when the sea-breeze dies away, it is adviseable, in the fine season, to bring up with a kedge and hawser, having every thing in readiness to heave away on the setting in of the land wind. On sailing along the coast from the direction of Vera Cruz, the entrance of the lagoon is easily recognized by its forming a wide gap in the trees. The masts of the vessels in the harbour will be seen over the west end of the Isle del Carmen; the trend of the coast to windward of Laguna, also, is widely different from that of the coast to leeward. The appearance of the coast to leeward is one uniform level, with no distinguishing marks. The *Altos* or *Heights of St. Gabriel,* shown in the charts, are far inland, and seen only when the air is particularly clear.

In the season of the Norths, on leaving Vera Cruz, stand well out to the northeastward, in order to gain such an offing as to enable you to run with a norther, and when it does come on, carry such sail as you think will bring you pretty near the coast at its conclusion, always recollecting to steer well to windward of Laguna. When you make the coast, you may be uncertain, from want of observations, whether you are to windward or leeward. In the first place notice carefully your soundings; to windward you will have pretty hard bottom, with 4 and 5 fathoms, about three miles from shore: to leeward you will have very soft mud, and be five miles from shore in 4 and 5 fathoms of water. Secondly observe carefully the direction of the coast; as before observed, the coast to windward has a very different bearing from the coast to leeward: in the third place the appearance of the coast to windward is very different from that to leeward: the land to windward appears at a distance as if indented with small hillocks; this is, in fact, only irregularities in the trees; to leeward the coast presents a most uniform appearance, being one continued level. We have often heard of great difficulty being experienced in making the coast and recognizing the place, but have never found much, from attention to the foregoing remarks. We may here observe that the hand lead-line ought to be very particularly marked in going to Laguna, and on this coast the lead-line should be always marked to feet between two and three fathoms.

In running for the entrance of the Laguna from the westward, keep your lead going, and be careful not to approach the coast off Punta Xicalango, the western entrance of the Lagoon, as a bank, with only 8 to 10 feet on it, extends to a considerable distance from the point. Having made the isle del Carmen to windward of the Lagoon, keep the lead also going in running down; and, on approaching the west end of the island, which forms the eastern side of the entrance to the Lagoon, give the shore a good berth, as a shoal, partly dry, extends to a long distance from the point. Bring the west end of the isle del Carmen to bear S. by E. and the extreme point of land to the westward S.W. by W.; you will then be in about 3¼ fathoms, and if the pilot be not out, in a fit place to anchor, and wait till he comes.

The pilots come out with the land-wind in the morning, in small canoes, and lie off, fishing, until two *p.m.*, when they return with the sea-breeze. If, therefore, you make the port in the afternoon, it will be requisite to wait till morning, as it is very unadviseable for a stranger to attempt entering without a pilot. Should, however, any untoward circumstances occur, to render it necessary, by attending to the following directions, a vessel may be conducted over in safety.

From the above-named anchorage steer S.W., keeping a look-out for a few Indian huts, situate on the western shore: you can ascertain their position from the mast head, previous to entering. So soon as you bring the village to bear south, a little westerly, steer for it until you get into 2¼ fathoms; keep along the western shore in this water, until the centre of the town of Laguna bears east; then haul up toward it, anchoring when convenient in about 5 fathoms, at 200 yards from shore.

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* See p. 143 and 159.

In

In several voyages to this place I have made the longitude of the fort 91° 40″, the mean of three chronometers, well regulated from Vera Cruz, assuming the longitude of the castle of S. Juan de Ulua to be 96° 7′. (Sights taken in an artificial horizon.) The latitude I have made 18° 37′ 30″.

Vessels may load up inside the Bar to 12½ feet, taking water and long boat in; you must then proceed outside the Bar to a sufficient depth of water, and complete the cargo with lighters. There is a very heavy sea in a norther, when riding outside the bar; but it seems that accidents seldom occur. The holding ground is excellent; and, with one anchor and a large scope of cable, you may, in general, ride in safety.

When homeward bound from Laguna, in all seasons, I prefer keeping along shore on the Campeché bank, this being, in my opinion, the safest and speediest passage. On this coast you have, in general, strong land-winds; so much so that, in several voyages, I have seldom been more than 48 hours from Laguna to Point Piedras. There is only, off Jaina, a shoal spot to be avoided, on which there is said to be 16 or 18 feet of water.

Having advanced to Point Piedras, in the season of the Norths, it is adviseable to make as much northing as possible, in order to be able to run to the eastward with a norther, when it blows: in the fine season you can take advantage of the winds, standing on whichever tack is most favorable. On passing Point Piedras, however, care must be taken to avoid the Sisal Shoal, and the Madagascar Shoal, which have been described. I once passed over the latter in the vessel under my command, then drawing 14½ feet; she touched once lightly abaft the mizen-mast; there was a heavy swell at the time; it is steep-to, as so fast as I could pass the lead overboard, we had 5 fathoms, 7, 11, and 13, in succession. I then made the latitude 25° 30′ and the longitude 90° 28′ by chronometer. After beating off the Bank, the navigator may proceed through the Strait of Florida by the copious directions given in the Colombian Navigator.

During my residence on the Mexican coast, in various seasons, I have never observed any regularity in the rise and fall of water; it is more a current than a tide, influenced mostly by the winds; and this is also the opinion of the pilots and fishermen on the coast.

(Mexicano: Nautical Magazine, August, 1838.)

39. MADAGASCAR and other SHOALS on the Bank of Campeché.—

In the descriptions of the different shoals on the Campeché Bank given hereafter, pages 145 to 155, may now be added another, discovered by H.M.S. *Madagascar*, at the distance of ten miles to the northwestward of the Sisal Shoal (page 145) and which exists near the spot where 9 fathoms is marked in the charts.* This portion of the Bank has been thoroughly surveyed by Captain Barnett, and from the survey it appears that the Sisal Shoal had been previously laid down a mile and a half too far to the northward, and 3½ minutes to the westward of its real position. The centre of this bank lies in latitude 21° 20′ 44″ and longitude 90° 9′ 36″ in a direction N. 31° W. *true*, and 12½ miles from Sisal castle; the least water on it is 9 feet, and it is about three fourths of a mile in extent, in a N.N.W. and S.S.E. direction. In the channel between it and the shore the depth is not more than 7 fathoms, with moderately regular soundings.

The MADAGASCAR SHOAL is a most dangerous narrow coral ledge, lying in a direction nearly east and west, about a mile and a quarter long, covered with dark grass, and having in one part, toward its western end, only 9 feet of water. The positions of its extremities are as follow:—*East end*, lat. 21° 26′ 6″, long. 90° 17′ 30″: *West end*, lat. 21° 26′ 18″, long. 90° 18′ 48″. The centre of the shoal lies N. 42° W. 21½ miles from Sisal castle, and in the channel between it and the Sisal Shoal, from which it lies N. 56° W. 10 miles, there are 10 fathoms of water.

The ARENAS SHOALS, lying in lat. 22° 7′, long. 91° 24′, are found to have been erroneously described by the Spanish officers. Instead of being more than nine miles in extent, they are actually not more than a mile and a half.

The NO-TE-PERDERAS, the Spaniards' mark for keeping clear of the Sisal Shoal, is becoming indistinct, in consequence of the trees on it falling from the ravages of an insect, which not only destroys the leaves, but attacks the whole tree, root and all, and is very destructive here and in other parts of the West Indies.

The shortest route toward Vera Cruz is now considered as the safest, and those intending

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* The Madagascar frigate struck and remained some time on this shoal, in July, 1837. She got off, after heaving overboard several guns, and losing an anchor and chain. The officers of the frigate surveyed the shoal, and found it to be a coral reef, extending a mile and three quarters N.N.E. to S.S.W. The least water on it is 16 feet.—*(Mexicano.)*

to

to take this way may run down the north coast of Yucatan, sighting the vigias or telegraphs, and keeping outside of 5 fathoms water: they should be cautious on approaching the castle of Sisal, between which and the shoal, they should approach the shores no nearer than in 4 nor to the shoal nearer than in 6 fathoms. Having cleared either the north or south channels, a west course thence will be perfectly safe, as are the other passages on the bank.

During the season of the Norths it will be prudent, more particularly for large ships, to go outside all the shoals, and very quick passages have frequently been made by so doing. Ships leaving Vera Cruz in this season should push up to the northward as fast as possible, and having attained a good position, the north becomes the best wind that can blow.

(*Mr. H. Davy.*)

40.—GENERAL REMARKS on the WINDS and SEASONS of the MEXICAN SEA.

The third volume of this work, which has been newly arranged, includes a description of the Winds and weather in the Colombian Seas, and the following description of those in the Mexican Sea from the *Derrotero de las Antillas*, may be considered as a continuation of the same.

"On the Coast of the Mexican Sea, from Vera Cruz to Tampico, the breeze from E.S.E. and East prevails in April, May, June, and July; and, at night, the land-breeze comes off from South to S.W.: but, if the land-breeze is from the N.W. with rain, the wind, on the day following, will be from North, N.N.E., or N.E., particularly in August and September: these winds are denominated, in the country, '*Vientos de Cabeza o Vendavales*' (head-winds or rainy winds); they are not strong, nor do they raise the sea; with them, therefore a vessel may take an anchorage as well as with the general breeze; but they impede getting out, for which the land-breeze is required. The *Vientos de Cabeza*, or head-winds, reach to about 20 or 30 leagues from the coast, at which distance are found those at East and E.S.E.*

"From the middle of September until the month of March, caution is necessary in making Vera Cruz, for the norths are then very heavy. The narrowness of this harbour, the obstruction formed by the shoals at its entrance, and the slender shelter it affords from the norths, render an attempt to make it, during one of them, extremely dangerous, for it will be impossible to take the anchorage. The following description of the winds here has been written by Don Bernardo de Orta, a captain in the Spanish navy, who has been captain of the Port, and who surveyed it.

"Although in the Gulf of Mexico we cannot say that there is any other constant wind than the general breeze of this region, notwithstanding that, from September to March, the north winds interrupt the general course, and, in some degree, divide the year into two seasons, *wet* and *dry*, or of the *Breezes* and *Norths*: the first, in which the breezes are settled, is from March to September; and the second, in which the norths blow, is from September to March. For greater clearness we shall explain each separately.

"The first of the norths is regularly felt in the month of September; but in this month and the following one, October, the norths do not blow with much force. Sometimes it happens that they do not appear, but, in that case, the breeze is interrupted by heavy rains and tornadoes. In November, the norths are established, blow with much strength, and continue a length of time during December, January, and February. In these months, after they begin, they increase fast; and in four hours or a little more, attain their utmost strength, with which they continue blowing for forty-eight hours; but afterward, though they do not cease for some days, they are moderate. In these months the norths are obscure and north-westerly, and they come on so frequently, that there is, in general, not more than four or six days between them. In March and April they are neither so frequent, nor last so long, and are clearer; but yet they are more fierce for the first twenty-four hours, and have less north-westing. In the interval before November, in which, as we have said, the *norths* are established, the weather is beautiful, and the general breeze blows with great regularity by day; the land-breeze as regularly by night.

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* In the Mexican Sea S.E. winds and small rain forebode a north in the season.

"There

"There are various signs by which the coming on of a *north* may be foreseen: such are, the wind steady at South; the moisture of the walls, and of the pavements of the houses and streets; seeing clearly the Peak of Orizaba and the mountains of Perote and Villa-Rica, with the cloud on those of St. Martin, having folds like a white sheet; the increase of heat and of dew; and a thick fog, or low scud, flying with velocity to the southward: but the most certain of all is the barometer; for this instrument, in the time of the Norths at Vera-Cruz, does not vary more, between its highest and lowest range, than $\frac{1}{10}$; that is to say, it does not rise higher than 30 inches $\frac{6}{10}$, nor fall lower than 29 inches $\frac{8}{10}$. The descent of the mercury predicts the Norths; but they do not begin to blow the moment it sinks, which it always does a short time before the north comes on: at these times lightnings appear on the horizon, especially from N.W. to N.E.; the sea sparkles: cobwebs are seen on the rigging, if by day: with such warnings trust not to the weather, for a North will infallibly come on.

"This wind generally moderates at the setting of the sun; that is, it does not retain the same strength which it had from nine in the morning to three in the afternoon, unless it commence in the evening or at night, for then it may increase otherwise. Sometimes it happens that, after dark, or a little before midnight, it is found to be the land-wind, from the northward and westward; in which case, should it get round to the southward of west, the north will be at an end, and the general breeze will to a certainty, come on at its regular hour: but, if that does not happen at the rising of the sun, or afterward, and at the turn of the tide, it will return to blow from the north, with the same violence as on the day before, and then it is called a *Norte de Marea*, or *Tide-North*.

"The Norths also sometimes conclude by taking to the northward and eastward, which is more certain; for, if the wind in the evening gets to N.E., although the sky remain covered the day following, but by night the land-breeze has been from the northward and westward, the regular breeze will surely ensue in the evening, good weather succeeding and continuing for four or six days; the latter period being the longest that it will last to, in the season of the norths: but, if the wind retrograde from N.E. to N.N.E. or North, the weather will be still unsettled.

"Examples are not wanting of norths happening in May, June, July, and August, at which times they are most furious, and are called *Nortes del Mueso Colorado*; the more moderate are called *Chocolateros*, but these are rather uncommon.

"The Wet Season, or Season of the Breezes, is from March to September: the Breezes, at the end of March and through the whole month of April, as already explained, are, from time to time, interrupted by Norths, and are from E.S.E. very fresh; the sky sometimes clear, at other times obscure. At times these touch from S.E., and continue all night, without giving place to the land-breeze, which prevails in general, every night, excepting when the north wind is on. The land-breeze is freshest when the rains have begun.

"After the sun passes the zenith of Vera Cruz, and until he returns to it, that is, from the 16th of May to the 27th of July, the breezes are of the lightest description; almost calms, with much mist or haze, and slight tornadoes. After that time, the pleasant breezes from N.W. to N.E. sometimes remain fixed.

"From the 27th of July to the middle of October, when the Norths become established, the tornadoes are fierce, with heavy rains, thunder, and lightning: those which bring the heaviest winds are from the east, but they are also of the shortest duration.

"In the season of the Breezes, the total variation of the barometer is $\frac{4}{10}$; the greatest ascent of the mercury is to 30 inches $\frac{34}{100}$, and its greatest descent to 29 inches $\frac{96}{100}$. The thermometer in July rises to 87°, and does not fall to 83½°: in December it rises to 80½°, but never falls below 66½°. This, it must be understood, was ascertained in the shade, the instrument being placed in one of the coolest and best ventilated halls in the castle.

"In the months of August and September, rarely a year passes without hurricanes near Florida and the northern Antillas; but to Vera Cruz, or any part of the coast thence to Campeché, they never arise; all that is felt being the heavy sea, which has arisen in the higher latitudes. Hurricanes begin to the northward and eastward; and, although they do not always go round the same way, yet, in general, they next go to the southward and eastward, with thick squally weather and rain."

II.—THE PHARONOLOGY,

OR

DESCRIPTION OF LIGHT-TOWERS AND OTHER LAND-MARKS,

ON ALL THE COASTS HEREAFTER DESCRIBED;

With References to the following Pages, in which further particulars may be found.

The word PHARONOLOGY signifies a description or knowledge of *Lighthouses;* it is derived from *Pharos*, a light-tower, and *Logos*, a word or discourse, &c. A further Explanation, with some Remarks on the most celebrated of these structures, is given in our late Editions of the Directories for the English Channel, Bay of Biscay, &c.

That the following descriptions are not, in some instances, more complete, is to be regretted; that they are not so has been owing to the very imperfect specifications of them which have been given, by persons either very negligent or unacquainted with the subject, who have been employed to issue them. The very point upon which a lighthouse stands, and the nature of the light, have frequently been left to be guessed at; and whether a round tower or a square one, of stone or of brick, among other essential particulars, has at times been totally unnoticed. We have, in several cases sought for more perfect information, but unfortunately without success; and we, therefore, entreat those who shall hereafter have charge of these concerns, not only to give the particulars more fully, but also to adopt a mode of publishing them which may cause them to be more generally known.

An excellent tabular Statement of the Lighthouses of the British Islands was first published by authority in London, April, 1832; it is arranged under the following heads, which comprehend the particulars requisite to every specification, and which, we hope, will be borne in mind upon every future occasion;—1. The name; 2. The precise situation; 3. The number of lights, if more than one, with their magnetic bearing and distance from each other; 4. If fixed, flashing, or revolving; 5. Time of revolution or flash; 6. Colour of the light, whether natural or brilliant, red, &c.; 7. Distance from which the light is seen in clear weather; 8. Points of the magnetic compass between which the lights may be seen; 9. If a harbour or tide light, the time of tide during which it, or a signal by day, is kept up; 10. Form and apparent colour of the lighthouse; height of the lantern above the sea at high water; 11. Height of the building from the base to the lantern; 12. When erected; 13. Especial remarks and sailing directions. Composed on this principle we shall be happy to see a complete schedule of the lights, &c., on the American coast. Indeed, the *naval departments of government* should consider it as a *duty* to collect and publish such information.

BERMUDAS.—Signal stations on Gibbs' Hill, on the S.W. Coast, Mount Langton, and St. George's Island. Pages 7, 8, 9, 11.

SABLE ISLAND.—Signals for the use of persons shipwrecked, already described in page xviii, and again noticed in page 14.

COASTS *of* NOVA-SCOTIA *and* NEW BRUNSWICK.

SAMBRO' ISLAND, on the west of Halifax Harbour; a round tower exhibiting a *brilliant fixed light*, at 210 feet above the level of the sea. Attached is a small party of artillery, with two 24 pounders for signals, &c. Pages 17, 18.

H.M.S. *Cornwallis*, 21st May, 1838, morning thick and foggy, on running for Sambro', with a strong S.W. breeze, at the rate of 10 or 11 knots; sounded in 80 fathoms, gravelly bottom. At 8 *a.m.* light airs; fired a gun, which was answered from the island with two, which were heard distinctly. At 8h. 30m. gained a glimpse of the lighthouse above the fog; it was but for a moment, and bore west nearly 11 miles. Mentioned to prove the excellence of the establishment. *Henry Davy, Master.*

HALIFAX

HALIFAX HARBOUR.—*Sherbrook Tower*, upon Maugher's Beach, on the eastern shore, with a fixed light, of a *red colour*, at 58 feet above the level of the sea, as a leading light for the harbour. Page 17.

Citadel Hill, which commands the town of Halifax, rises to 240 feet above the level of the sea, and has on its summit *three flag staffs*, serving as an excellent mark for entering. Pages 18, 19.

LUNENBURG LIGHTHOUSE, off MAHONE BAY, upon the eastern point of *Cross Island*, painted *red*, with lantern black, constructed years ago, but no intimation of its completion had appeared when this work was committed to the press, in Sept. 1839.

To the note (*) in page 24 may be added that, the tower was building in 1834, and a *St. Andrew's cross* was first painted on it, as its distinguishing characteristic; but as this did not sufficiently answer the purpose, the tower and keeper's house were afterward painted *red*; the lantern *black*. The indecision of those who have the direction of this concern renders it uncertain when the tower will be lighted; but so soon as it is, the description will be given on the charts.

LIVERPOOL BAY.—COFFIN'S ISLAND, at the entrance of Liverpool Bay, has a lighthouse, exhibiting a *revolving light*, at 90 feet above the level of the sea, and which appears full at intervals of two minutes. Pages 17, 25.

CAPE ROSEWAY.—*Shelburne Tower*, on Cape Roseway, a handsome structure, white and conspicuous by day, at night exhibits, vertically, two fixed lights; the upper and largest being at about 150 feet above the level of the sea, and the smaller at 114 feet. Pages 17, 26.

CAPE SABLE SEAL ISLAND.—A modern lighthouse on the S.W. part of the southern Seal Island, latitude about 43° 24′, longitude 65° 59′, exhibiting a brilliant fixed light, at about 80 feet above high water mark. It is stated to bear W. by N. (by compass) 21 miles from Cape Sable, and is seen from every point of the compass. A recent description states that the *Blonde Rock* lies about two miles S.S.W. from the lighthouse; and that, between it and the island are some other dangers, on rocky ground. Large vessels ought not, therefore, to attempt passing between. See pages xxii and 30.

BRYER'S ISLAND; Latitude 44° 14½′.—A new lighthouse, lantern, and lamps, with *fixed* light, in lieu of the old and disgraceful lighthouse. The light is elevated at 92 feet above the level of the sea. Page 32.

ANNAPOLIS.—A light-tower on *Point Prim*, upon the west side of the entrance of the Gut of Annapolis, formerly said to stand as "a monument of mistaken economy." But this, with the other lights in the bay, has been improved, and displays itself at 120 feet above the sea. Page 33.

QUAKO HEAD,—Lat. 45° 23′, long. 65° 20′.—A lighthouse on a small rock, lying near this Head, first lighted in September, 1835. The light is brilliant and revolving, twice completely dark and full in every minute. Page 34.

ST. JOHN'S —PARTRIDGE ISLAND, near St. John's, New Brunswick. The lighthouse, which has been renewed, shows a brilliant *fixed* light, at about 120 feet above the sea, and which may be seen at an increased distance. It has a bell, which is tolled in thick weather. Page 34.

BEACON LIGHT.—Within Partridge Island, upon the spit or bar which extends S.S.E. from Sand Point, and which dries at two-thirds ebb, is a beacon-tower, upon which a light is established; this light is eminently useful to the coasters, and all vessels having pilots on board, as it enables them to enter the harbour at all hours of the night. Page 34.

POINT LAPREAU,—on the north side of the Bay of Fundy.—A lighthouse, erected in 1831, exhibits *two brilliant fixed lights*, vertically, one being 18 feet below the other: the lower lantern is attached to the outside of the building, as shown in page 37.

GANNET ROCK, south of Grand Manan. On this rock, which is 40 feet high, a light-house has, at length, been erected, and was lighted for the first time, on the 1st of December, 1831. The lantern was originally fitted with *red* glass, as its characteristic distinction; but the coloured glass was found to be too obscure in so foggy an atmosphere. It was afterward changed to a bright fixed light; this alteration was the cause of several mistakes and some accidents, as then there was nothing to distinguish it from either Bryer's Island or Libby Island lights. It was, therefore, deemed expedient to make it distinct from all other lights on this coast, and a *flash light* was determined upon, which has consequently been put in operation. Ships ought not, unnecessarily, to run for this light;

for, if the weather should suddenly become thick or foggy, they might be involved in the dangers which surround it. See page 38.

In order to prevent the lighthouse from being mistaken for a sail, it has, for some years past, been painted *black and white*, in stripes (1838.)

In the specification of this light by the commissioners, the bearings of it from Bryer's Island, and dangers in the vicinity, have been given as follow: from Bryer's Island N.W. ¼ W., 21 miles; from the *Old Proprietor*, which dries at three-quarters ebb, and is very dangerous, W.S.W. ¼ W. 7 miles: from the *Black Rock*, off White Head, always 25 feet above water, S.W. ¼ W.; from the S.W. Head of Grand Manan, S.E. ¼ S.; from the northernmost of the Murr Ledges, (dry at three-quarters ebb,) S.E. by E. ¼ E.; from the southernmost of the same, called *St. Mary's*, always above water, N.E. by E. ¼ E.; from the *Machias Seal Island Lights*, (next mentioned,) E.S.E. ¼ E. about 13 miles.

It is added, as a Note, that, Between the northernmost and southernmost of the *Murr Ledges* there is a range of dangerous rocks and shoals, many of them always above water, and which extend westward from the lighthouse about four miles; from this range, farther westerly, about three miles, lies a dangerous breaker, called the *Roaring Bull*, which may be avoided by keeping three remarkable headlands near the S.W. end of Grand Manan open.

MACHIAS' SEAL ISLANDS.—On the southernmost isle, two lighthouses, about 200 feet apart, and with *brilliant fixed lights*, at about 50 feet above high water mark. In a line they bear from each other E.S.E. and W.N.W. with the keeper's house between them. Page 38.

The bearings of these lights, from different points in the vicinity, have been given as follow:—From the southernmost Murr Ledge, (St. Mary's) W.N.W., westerly; from the Gannet Light, W.N.W. ¼ W.: from the Southern Head of Grand Manan, W.S.W. ¼ W.; from the Northern Head of Grand Manan, S.W. ¼ W.; from the N.E. Rock, S.W. by S., two miles; from Little River Head, S. by E.; from Libby Island Light, S.E. by E.

Vessels, in standing in to the northward, between these lights and the Gannet Rock, should tack or haul off to the southward the moment they bring these lights in one; as they will then be not more than three-quarters of a mile from the Murr Ledges, if more than five miles to the eastward of the lights.

QUODDY HEAD, on the western side of the entrance to the Scoodick River, and opposite to the north end of Grand Manan, on the west. A lighthouse, with brilliant fixed light, at 90 feet above the sea, which may be seen nearly seven leagues off. An alarm bell, near the lighthouse, strikes ten times in a minute, and may be heard, in calm weather, five miles off. Page 39.

HEAD HARBOUR LIGHT.—This light (mentioned in page 39) is established on the N.E. extremity of Campo-bello, and was intended to enable vessels, at all times, to enter Head Harbour. It likewise marks the entrance into the main channel of the River St. Croix, leading to the inner Bay of Passamaquoddy, St. Andrew's, &c. and is, therefore, very useful to the coasting trade.

FREDONIA *or* UNITED STATES.

QUODDY HEAD LIGHTHOUSE, with a bright fixed light, first built in 1808, but rebuilt and greatly improved, as described above.

LIBBY or LIBBEE ISLES, near MACHIAS BAY.—On the southernmost a lighthouse, with *fixed light*, in latitude about 44° 35′, and 60 feet above the level of the sea. Page 43.

MOOSEPECK HEAD.—Lighthouse on Mistake Isle, three leagues S.W. ¼ W. from that of the Libby Isles. It exhibits a *revolving* light at 54 feet above the sea, which is eclipsed twice in every four minutes. At six leagues off the duration of light and dark appears nearly equal; but, on approaching, the time of darkness will diminish, and that of light increase. Page 43.

LITTLE MANAN.—A lighthouse of stone, with brilliant fixed light, at 53 feet above the level of the sea, and 4½ miles S.E. ¼ S. from the entrance of the port of Gouldsborough. Lat. 44° 23′, long. 67° 47′. Page 44.

CRANBERRY ISLANDS.—A lighthouse on *Baker's Island*, the outermost of the Cran-

Cranberry Isles, with brilliant fixed light, at 70 feet above the sea; bearing from that on the Little Manan, W.S.W. ¼ W. 16 miles. Lat. 44° 15′, long. 68° 6′. Page 44.

MOUNT DESERT ROCK.—Latitude 43° 54′, longitude 68° 3′; lighthouse, originally described in a very imperfect notice, as displaying a brilliant fixed light, which commenced on the 20th of August, 1830; but which we are since informed shows a bright *red* light. Page 42.

METINICUS ISLES, off the BAY of PENOBSCOT.—On the outer *Wooden Ball Rock*, two distinct lantern lights of equal height, at 82 feet above the sea, and which when in one, bear N.N.W. and S.S.E.; they are 40 feet from each other, and of course appear open to those passing on the west toward the Penobscot, &c. Page 45.

WHITE HEAD, on the western side of the mouth of the Penobscot, lat. 43° 58′, long. 69° 1′.—Lighthouse, with brilliant fixed light, at 58 feet above the level of the sea, with that on Mount Desert Rock bearing E.S.E. 13 leagues. Pages 45, 46.

OWL'S HEAD, on the western side of the PENOBSCOT, at seven miles above White Head,—Lighthouse, with brilliant fixed lights, at 150 feet above the level of the sea, the fairway course to which is N.W. by N. Page 45.

PENOBSCOT HARBOUR LIGHTS.—One on *Brown's Head*, the western side of the Fox Island Passage, with fixed light at 80 feet above high water. Another on *Dices Island*, upon the eastern side of the river, at the entrance of Castine Harbour, with fixed light at 116 feet. Page 45.

MARSHALL'S POINT, at the entrance of Herring Gut, to the S.W. of the Penobscot.—A small fixed light at 30 feet above the sea. Page 46.

MANHEGIN or MONHEGAN ISLAND, westward of the Penobscot, Lat. 43° 44½′, long. 69° 12′.—A lighthouse showing a *revolving* light at 170 feet above the level of the sea. The revolution is performed once in three minutes, and exhibits alternately, in that time, a blood-red and brilliant light. Page 46.

GEORGE RIVER, the first to the westward of the Penobscot.—A lighthouse on *Franklin's Isle*, at about a league to the W.S.W. from the entrance, with brilliant fixed light, at 50 feet above the level of the sea, and to be left, when sailing for the river, on the right or starboard side. Page 46.

PENMAQUID POINT, the eastern point of John's or Bristol Bay.—A lighthouse, having a fixed light, at 75 feet above the sea, and at four leagues N.W. by W. from the revolving light on Manhegin Island, Lat. 43° 49½′, long. 69° 25′. Page 46.

BURNT ISLAND, near BOOTH BAY.—A *fixed* harbour light, at 56 feet above the sea, immediately off the point which separates Damariscotty from Booth Bay and the harbour of Townsend, and two leagues W.S.W. ¼ W. from Penmaquid Point. With the light N. by E. you may run for it without danger. Pages 46, 47.

SEGWINE ISLE, off the mouth of the KENEBEC; a lighthouse of the first class, with a brilliant fixed light at 200 feet above the level of the sea, and which may be seen at nine leagues off. Pages 46, 48.

KENNEBEC RIVER.—A *fixed* harbour-light on Pond Island, at a mile and three quarters N. ¼ E. from Segwine Island. Bearing N.N.E. it leads directly to the river, and may be passed on either side. Pages 46, 47.

SHEEPSCUT RIVER.—*On Hendrick's Head*, at the mouth of this river, a brilliant fixed light, at 30 feet, for leading to the entrance. Page 47.

CAPE ELIZABETH; two lighthouses at 300 yards from each other, and at about the same distance from the sea-shore, bearing from each other N.E. ¼ E. and S.W. ¼ W. The N.E. light is brilliant and *fixed*; the S.W. *revolving*, full and obscuring, alternately, in every minute and a half. The lanterns are 140 feet above the level of high water. Page 48.

HARPSWELL SOUND.—A stone column, erected on the Little Mark Island, off the western side of the entrance, at about half-way between the Kennebec and Portland. It is 50 feet high, and painted perpendicularly in black and white stripes, excepting near the top, which is black on each side. The isle is 40 feet high above the sea. Page 48.

PORTLAND POINT, at the entrance of Portland Harbour; a lighthouse of stone, with a *fixed light*, at 85 feet above the level of high water. It bears N. 1° E. 4 miles from Cape Elizabeth. Page 49.

Obser-

Observatory on the Fort Hill of Portland, with Signals for vessels entering. Page 49.

WOOD ISLAND, on the south side of Saco Bay; a lighthouse with a brilliant *flashing* or intermittent light, at 45 feet above the sea, of which the eclipses appear total until within the distance of 7 or 6 miles, as shown in pages 49, 50.

CAPE PORPOISE.—A new lighthouse on Goat Isle, at the mouth of the little harbour of *Cape Porpoise*, and about ten miles to the S.W. from that on Wood Island. If to the eastward, and you make Wood Island, when bound to Cape Porpoise Harbour, bring Wood Island to bear N.E. by N. and run S.W. until you bring Cape Porpoise light to bear N. by W., then steer directly for this light until you shut in Wood Island light by the eastern head of Porpoise Harbour, when you will be abreast of a ledge called the *Old Prince*, lying half a mile S.E. by S. from the Cape light, which breaks at low water, and with a heavy sea. Now steer N.N.W. until the light bears E.N.E. when you will be up with the entrance of the harbour. If at low water, keep midway between the two points, but with high water keep the larboard shore best aboard. From between the two points, steer N.W. one quarter of a mile, and then anchor in 3 fathoms. The entrance is not safe unless with a fair wind.

Opposite to the lighthouse is *Folly Island*, which forms one side of the harbour. The S.S.E. part of Folly Island Point bears from the light S. ½ W. about one mile and a quarter, and a shoal projects from it to nearly a mile. Distance across the entrance of the harbour, one eighth of a mile. Page 50.

BOON ISLAND; a lighthouse of stone, on the western part, with a brilliant *fixed light* at 70 feet above the level of the sea; seen at six leagues off. Page 50.

PORTSMOUTH HARBOUR.—A lighthouse on the reef called the *Whale's Back*, upon the eastern side of the entrance, having two fixed lights vertically, ten feet apart. The upper light is 48 feet above the level of high water. Page 50.

Another lighthouse on the N.E. point of Newcastle Island, upon the western side of the harbour, and showing a fixed light at 90 feet. Page ~~116~~ 50.

ISLES of SHOALS.—A lighthouse on the south point of White Island, exhibiting a light at 87 feet above the sea, which revolves once in three minutes and a quarter, and exhibits, in succession, a *bright red*, a *dim*, and a *brilliant*, light. The last may be discerned, in clear weather, at about seven leagues off; and on approaching, the red and dim in succession. The light is always visible within three or four miles. A bell, suspended in the tower, is kept tolling during thick weather, both by night and day; its sound may be heard about four miles off. Page 54.

NEWBURY-PORT; two lighthouses on the south side of the Entrance, upon the north end of Plum Island. The lights are *fixed*, at 37 feet above high water, and one-third of a mile from each other, and in one lead into the harbour. Pages 52, 53.

Signals for vessels when in sight and advancing. Page 54.

ANNIS SQUAM or Squam Harbour.—An octagonal building, painted white, with harbour light, on Wigwam Point, upon the eastern side of the entrance. The light is *fixed*, and about 50 feet above the surface of the water. Page 54. A flag on shore in boisterous weather. Page 55.

CAPE ANNE.—Thatchers' Isle, off Cape Anne; two lighthouses, with *fixed lights*, at one-third of a mile apart, and bearing from each other N. by W. and S. by E. The lanterns are about 90 feet above the sea, and may be seen 7 or 8 leagues off. In thick weather a gun is fired, to answer signals. Pages 60, 65.

GLOUCESTER HARBOUR; to the S.W. of Cape Anne.—A lighthouse, on an islet called *Ten* Pound Island, with a *fixed light* about 45 feet above the level of the sea, to lead into the harbour. Page 65.

MARBLEHEAD and SALEM.—Baker's Island, off Marblehead, near the middle of the entrance to Salem; two lighthouses, with *fixed lights*, 50 feet asunder, of unequal height, one being much higher than the other, and bearing, when in a line, N.W. ¼ W. The high light seen at 6½ to 7 leagues off. Page 62.

On *Cat Island*, which is about a mile and a half S.W. by W. from Baker's Island, and a mile from Marblehead Rock, is a spar, 40 feet high, to the top of which is attached a large cask, very useful as a mark from sea. Note † Page 63.

On the *Half-way Rock*, to the east of Marblehead, about 2½ miles from the nearest land,

land, and half-way between the lighthouses of Boston and Thatcher's Island, is a pyramidal beacon, with a spindle, supporting a large copper ball. Note ‡ Page 63.

BOSTON OUTER LIGHT.—The lighthouse, more than 82 feet high, stands on a small isle at the north side of the entrance of the main channel into the harbour. The light is *revolving;* it appears brilliant for 40 seconds and obscured 20 seconds alternately. At the distance of 7 or 8 leagues, the interval of darkness will be twice the duration of light; but, on approaching, the time of obscurity will decrease. See page 60.

On *Long Island Head*, in Boston Harbour, is another lighthouse, which shows a *fixed light*, at 80 feet above the level of the sea, erected to enable vessels to run in through the passage of Broad Sound in the night. Pages 61, 62.

SCITUATE, about half-way between the harbours of Boston and Plymouth; a light-house exhibiting two lights, one above the other; it stands on Cedar Point, the north chop of the harbour. The upper light is brilliant, at 50 feet above the sea; the lower, at 14 feet below the upper one, appears of a *blood red colour*, and much broader than the upper one. Page 66.

PLYMOUTH.—Two lights on the *Gurnet*, a round hummock on the north side of the entrance to Plymouth Harbour: they are *brilliant and fixed*, at about 86 feet above the surface of the sea, and 15 feet apart. May be seen at 5 leagues off. Page 58.

BARNSTAPLE HARBOUR, at 7 leagues S.E. ½ S. from the Plymouth or Gurnet Lights; a *fixed harbour light*, upon Sandy Neck, on the west side of the entrance. Page 68.

WELLFLEET, on the eastern coast of Cape Cod Bay; a *fixed light* on Billingsgate Island, at the entrance of the harbour, 4½ leagues S.E. by S. from Race Point light, hereafter noticed. Page 67.

PROVINCETOWN OR CAPE COD HARBOUR.—A *fixed light* upon Long Point, at the entrance of Provincetown harbour, about 2 leagues to the south-eastward of the Race Point of Cape Cod. Page 67.

RACE POINT of CAPE COD; lighthouse with harbour light, which *revolves* on the same principle as that of Boston above described. It is 25 feet above the level of the sea, and 155 feet distant from high water mark. The light is not seen until it bears S. by W. ½ W. Page 67.

CAPE COD.—Lighthouse of the CLAY PONDS, exhibiting a *brilliant fixed light*, at nearly 200 feet above high water mark; but, as there is generally a haze over the Cape, the light is seldom seen at more than six leagues off. Page 66.

CHATHAM HARBOUR; two lighthouses on the point called James Head, with fixed lights at about 40 feet above the sea, which may be seen at 5 leagues off. Page 71.

MONAMOY SANDY POINT, at three leagues to the southward of Chatham lights, a *fixed harbour light*, at 25 feet. Page 72.

HYANNAS HARBOUR, upon the south coast of the peninsula of Barnstaple; a lighthouse of stone, painted white, on the eastern side of the entrance. The light is fixed, brilliant, and 70 feet above the sea. Pages 72 and 77.

NOBSQUE POINT, south-westward of the town of Falmouth; a lighthouse, with *brilliant fixed light*, erected in 1828, which stands near the eastern extremity of the passage called Wood's Hole. Pages 72 and 80.

SANDY POINT, or Northern extremity of NANTUCKET ISLAND; a brilliant *fixed light*, at 70 feet above the level of the sea, which may be seen at a great distance. Page 72.

SHERBURN or NANTUCKET HARBOUR; harbour lights on the western side, which, when in a line, lead in from the outer buoy. Pages 72 and 76.

VINEYARD SOUND.—A *light vessel* on the tail of the Cross Rips, at the east end of the Horse-shoe, between the Horse-shoe and Tuckannuck Shoals, with Cape Poge bearing due west by compass. (Not so far to the south and east as formerly represented.) Small vessels may pass it on either side. Pages 72 and 75.

CAPE POGE, near the N.E. end of Martha's Vineyard; a lighthouse, with brilliant fixed light at 55 feet above the level of the sea. Page 72.

EDGARTOWN HARBOUR; a lighthouse, with *fixed light*, on the pier upon the western side of the entrance, at 3½ miles W.S.W. from Cape Poge. Pages 72, 75, 80.

HOLMES'S

HOLMES'S HOLE; a lighthouse, with *fixed light*, on the west chop or side of the Entrance, at 4 miles S.E. ½ S. from that on Nobsque Point. Pages 72, 75, 80.

GAY HEAD, the west end of MARTHA'S VINEYARD; a tower with brilliant *revolving light*, at 150 feet above the sea; the principal land-mark for Vineyard Sound. The lights revolve once in about four minutes, and appear in full lustre twice in each revolution. At 12 miles off they are obscured about three-fourths of the time; at three miles they may always be seen, though dimly, alternately. Pages 72, 78.

ELIZABETH ISLES.—A *fixed light* on CUTTAHUNK, the westernmost of the Elizabeth Isles, which divide the Vineyard Sound from Buzzard's Bay, at 84½ feet. Another nearly upon the middle of NASHON, the fourth isle from the west of the same groupe, and on the west side of an indent called *Tarpaulin Cove*, at 80 feet. Pages 72, 79.

BUZZARD'S BAY.—ROUNDHILL POINT, on the western side; upon a cluster of rocks called the DUMPLINGS, is a lighthouse, with *fixed light* at 43 feet, which bears nearly N. by E. 8 miles from that on Cuttahunk, above-mentioned. Pages 82, 83.

CLARK'S POINT, on the west side of the entrance to NEW BEDFORD; a lighthouse, with brilliant fixed light, at 52 feet above high water, and N.N.E. four miles from the Dumplin light. Pages 81, 82.

Notice was given, in 1833, that a spar buoy had been placed on the *Weepicket Rock*, in Buzzard Bay, which lies in a direct track from this place to Wood's Hole. The buoy is about 20 feet distant in a N.W. direction from the Rock, and lies in 13 feet at low water.

BIRD ISLAND, in the northern part of Buzzard's Bay; near the mouth of Sippigan or Rochester Harbour; a light-tower of stone, with a *revolving* light, at about 30 feet above the level of the sea. For the particular description, see page 84.

RHODE ISLAND.—On the point called the BEAVER'S TAIL, the southern extremity of CONANICUT ISLAND; a tower, with *brilliant fixed light*, at about 70 feet above the level of the sea. Page 86.

GOAT ISLAND, opposite the town of Newport; a fixed harbour light on the north end, at about 55 feet. Page 86.

NARRAGANSET BAY.—POINT JUDITH, on the western side of the entrance to NARRAGANSET BAY; a tower of stone, with *revolving* light, at 60 feet. Within three leagues the light does not wholly disappear. Page 86.

DUTCH or DUCK ISLAND; a harbour light at three miles North from that of the Beaver Tail and the north side of the entrance of Duck Island Harbour. Page 87.

WARWICK NECK, on the west side of the entrance to Providence River; a harbour light, at 3 leagues to the northward of that on Duck Island. Page 87. A light-vessel at the mouth of the Pasquotauk River, below Providence.

BLOCK ISLAND; on the N.W. point two towers, 25 feet from each other, with *fixed* lights, at the height of 58 feet, in a line bearing South, to mark the direction of the reef which extends from that end of the island. The two lights cannot be made separately, when to the northward, unless in a position to make Point Judith light N.E. Page 86.

MONTUCK POINT, the eastern extremity of LONG ISLAND; a tower with brilliant *fixed light*, at 100 feet above the sea, and which may be seen at 8 or 9 leagues off. Pages 88 and 91.

WATCH HILL POINT, near Westerly, on the Rhode Island shore; a tower with *revolving light*, at 50 feet above the sea. Page 88.

LONG ISLAND SOUND.—Descriptions of all the lighthouses in this Sound, fifteen in number, are given in pages 88 and 89 hereafter, and they have been inserted in the charts.

LONG ISLAND, south coast of; on the eastern side of FIVE ISLAND INLET, 21½ leagues W.S.W. from Montuck Point; and 12 leagues E. by N. from the bar of New York Harbour; a lofty tower with *revolving* light at the height of 80 feet, and seen five leagues off. The shoal along shore is here a league in breadth. Page 98.

SANDY HOOK Light-vessel.—The present light-ship off Sandy Hook was placed at her station on the 15th of May, 1839, with the light-tower on Sandy Hook bearing W.N.W. about thirteen miles, and the Highlands of Nevisink W. by N. about 11 miles.

NEW YORK HARBOUR.—HIGH LANDS of NEVISINK, without the Entrance, on the

the south side of New York Harbour; two towers, with lights elevated high above the level of the sea, and which, in clear weather may be discerned at 13 leagues off. The northern is a brilliant *fixed light*, at 464 feet above the sea. The south light, at 241 feet, *revolves* once in 2½ minutes. The lighthouses bear from each other N. 23° W. and S. 23° E., and the distance between them is about 300 feet. Page 96.

LIGHT-TOWER on SANDY HOOK, with brilliant *fixed light*, at 90 feet above the sea, may be seen at 9 or 10 leagues off. Also two beacon-lights for pilots in the night. Page 96.

EASTERN POINT of STATEN ISLAND; lighthouse with *fixed light*, at the entrance of the Narrows, opposite to Fort La Fayette. Page 97.

S.W. COAST of STATEN ISLAND; near a Blockhouse over the red bank of PRINCE'S BAY; a lighthouse, with *fixed light*, standing on a hill 77 feet high above the level of high water. The height of the lighthouse is 30 feet, and its bearing from that on Sandy Hook N. 71° W., or W.S.W. ¼ W. 10 miles. From off the S.W. Spit Buoy, in the Harbour, the course toward Prince's Bay is nearly W.N.W. for 6 miles; this will lead up to a point called *Sequines Point*, which is crowned with a clump of Poplars; and thence West, rather more than a mile, to the anchorage, leaving the Round or Middle Shoal, with a spar buoy upon it, on the larboard hand. The town of AMBOY, on an excellent harbour, is four miles above Prince's Bay.*

The DELAWARE.—Upon CAPE MAY, the north point of the Mouth of the Delaware, is a lighthouse, with a *revolving light*, at 75 feet above the level of the sea. The light is on the principle of that in Boston Harbour, described in page 60, and which, on a near approach appears fixed. The light appears in its greatest lustre once in a minute, and may be seen at 7 leagues off. Page 104.

CAPE MAY BANK; a light-vessel on the N.W. side of this bank, exhibiting two lights from sun-set to sun-rise. In foggy and snowy weather a bell is kept tolling at the rate of one stroke in a minute. Pages 104, 5.

CAPE HENLOPEN; an octagonal lighthouse with a brilliant *fixed light*, elevated more than 200 feet above the sea, and which may, at times, be seen nine leagues off. At a mile from the high light, and near the sea, is a beacon light, 35 feet high, adapted for guiding vessels into the Roads, within the Cape, and which may be seen at 6 leagues. Pages 105, 6.

DELAWARE RIVER.—A light-tower which formerly stood on the *Brandy-wine* has been undermined and destroyed; but a light vessel is stationed on the western side of that bank; and there is, in winter, another on the upper end of the *Fourteen-feet Bank*; another on the east side of the *Upper Middle*; and there remains a harbour light near the mouth of *Duck Creek*, upon the Delaware or western shore; and another on the spot called *Mahon's Ditch*, upon the opposite shore. The light on the Pea patch has been discontinued, the fort being destroyed. At Lewiston, four miles W. by N. from Cape Henlopen, are two signal-lights within the piers.

ASSATEAGUE or ASSATIECK ISLE.—A fixed light on the S.E. point, about half way between Cape Henlopen and Cape Charles, as a guide for avoiding the Chingoteague shoals.

The CHESAPEAKE.—The lighthouse on SMITH'S ISLAND, without the Chesapeake, and that of CAPE HENRY, the south point of the entrance, are described hereafter, in page 109; and to these descriptions are added those of all the other lighthouses and light-vessels in the Chesapeake, to its head at the Susquehanna. See Pages 109 and 110. For View of Cape Henry, see page 108.

CAPE HATTERAS; a tower painted white, in latitude 35° 14′, with *brilliant fixed light*, at 95 feet above the level of the sea, and seen at more than five leagues off. The point now extends more than a mile from the lighthouse. Page 119.

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* Among the improvements which have been announced for facilitating the navigation of the Hudson or North River are, a lighthouse on *Verplank's Point*, above Haverstraw Bay; two small lighthouses, viz. one on the Flats two miles North of *Kinderhook Upper Landing*, called the Drowned Lands, and one on the point of the island on the west side of the channel, opposite the *Lower Landing*: (lat. 42° 21′) also, four buoys in the River; one on the reef opposite *Van Wees Point*; one on a reef north of *Constitution Point*; one on a reef on the south point of *Conner's Hook Island*; and one on a wreck in *Haverstraw Bay*.

A light-

A light-vessel to the eastward of Cape Hatteras Shoals, and 11 miles S.E. from Cape Hatteras, if yet on her station, displays two lights, one at the height of 60, and the other at 45, feet. Page 119, and note. *We have reason for supposing that she is finally removed.*

OCRACOCK INLET, nine leagues to the S.W. by W. ½ W. from Cape Hatteras. A tower with *revolving* light at 75 feet above the sea, and which appears full once in two minutes. To be left on the starboard side when entering. From the middle of the Bar, in 13 feet of water, it bears W.N.W. a mile and a half. Visible between five and six leagues off.

*** *For the Lights in Pamtico Sound, see the Note, page* 120.

CAPE LOOKOUT, in latitude 34° 39′.—A tower containing a fixed light, at nearly 100 feet above the level of the sea. The tower is of wood, painted in horizontal stripes of red and white alternately, and at a distance appears like a ship with her sails clewed up. The building is surrounded by small trees, from which a bold sand beach extends in a S.E. direction about three miles, in the central part of which are small hillocks of sand. It has been remarked that, although the light may be seen clearly through the night, and till near the approach of day, yet it then becomes obscured, owing, it is supposed, to a mist arising between the vessel and the lamps. Approach no nearer to the shoals in the night than 7 fathoms on the east, and 10 on the west, side. Page 120.

CAPE FEAR.—New Inlet of Cape Fear River; a lighthouse upon the north side of the entrance, called *Federal Point*, which is painted *white*, and exhibits a *brilliant* fixed light, at the height of 44 feet. From the Light the Bar extends E.S.E. one mile. Page 121.

Bald Head of Cape Fear, the western bluff of Smith's Island; a lighthouse painted *black*, at about a mile from the sea, and shows a fixed light at more than 100 feet above high water. Page 121.

GEORGETOWN HARBOUR; a lighthouse on the sandy beach at the southern point of North Island. The lighthouse is a circular white tower, which exhibits a brilliant fixed light at 90 feet above the level of the sea. Page 123.

CAPE ROMAN.—Great Racoon Kay, near Cape Roman; a lighthouse, exhibiting a *fixed light*, of a *bright red colour*, at 85 feet above the level of the sea. The tower is painted in horizontal stripes, alternately *black and white*. Page 125.

CHARLESTON HARBOUR; lighthouse in latitude 32° 41′, on a low sandy point of Lighthouse Island; the light, which is elevated 85 feet above the sea, appears at a distance as a *revolving light*, and may be seen at 8 leagues off. When first made the time of darkness will be twice that of light, but the interval is reduced on approaching, and within three leagues the light does not wholly disappear. Page 125.

SAVANNA.—Tybee Lighthouse, at the entrance of Savanna River, shows a *fixed light*, at 85 feet above the sea. A beacon light stands at half a mile to the eastward of it, and the two lights in a line bear W. ½ N. Pages 128, 129.

DOBOY.—Sapello Island, South End, on the north side of Doboy Inlet; a lighthouse, painted in stripes, horizontally, *red and white*, which at a distance gives it the appearance of a ship, with the sails clewed up. The light *revolves* once in five minutes, at an elevation of 74 feet above the sea, and in that time appears thrice in its greatest lustre. For a further description see page 130.

Beacon-towers in Doboy Sound.—At the entrance of the Sound, and nearly four miles west from the edge of the outer bar, on the shore of Wolf Island, are two beacon towers bearing about S. by E. 2¼ miles from the lighthouse above described. Each has a lantern, with six lamps and reflectors: of these lamps four form the points of a circle, in a N.E. and S.W. direction, and each has a nine-inch convex lens placed before it: hence, when a vessel from without the Bar brings these lights nearly in a range, they will appear differently from what they would if seen either from the northward or southward of the same.

The western or highest beacon tower is painted white, and its lantern is elevated 25 feet above the ground on which it stands: the eastern or lower one is painted black, and is 15 feet above the surface. Page 130.

St. SIMON'S ISLAND, South End; a tower, apparently of white stone, 75 feet in height: it displays a brilliant *fixed* light. Page 131.

CUM-

CUMBERLAND ISLAND, south end, at the entrance of St. Mary's River; a tower with *revolving* light at 80 feet above high water. It appears full twice in each revolution in three minutes, or once in a minute and a half. On the north end of Amelia Island, upon the opposite side of the entrance, are two beacons, which, bearing W.N.W. ½ W. lead over the Bar. Page 131.

St. JOHN'S RIVER.—In 1828 a vote was passed for a lighthouse and two buoys to facilitate the navigation of this river, and the tower was subsequently erected, close to the beach, at one third of a mile N.W. from General's Mount, on the south side of the entrance, with a *fixed* light at 65 feet above the level of the sea; this has been taken down, owing to the sand at the base having been washed away; but it seems likely that another light-tower will be erected in a more eligible situation. Page 133.

St. AUGUSTIN.—A square tower of shell-stone, 70 feet high, and painted white, on the northern part of the island of St. Anastasia. It exhibits a brilliant *fixed* light. The lantern is of iron and contains six patent lamps. Also a signal post, with signals for vessels entering. Page 133. Vessels bound for this port show by signal, when off the Bar, their draught of water, by hauling down the flag and hoisting it repeatedly, equal to the number of feet they draw.

BAHAMA BANK, near the BEMINI ISLES. On a ridge of coral, extending from the southern extremity of *Gun Kay*, the northernmost of the *Cat Kays*, in latitude 25° 34½′, longitude 79° 18′, is a circular light-tower, erected by the British government, and first lighted in May, 1836.

The base of the tower is 25 feet above high water, and the height of the tower is 55 feet. The light, which *revolves* once in a minute, is therefore 80 feet above the level of the sea, and may be seen from four to five leagues off, in all directions but the arc between S. by W. ½ W. and S. ¾ E. (by compass) where, at the distance of about eight miles, it is intercepted by the Bemini Isles.

When within the distance of five miles, vessels should not bring the light to the southward of S.E., as the chain of kays and reefs project in a curve to the westward; and, as they lie within a mile of the outer edge of the bank, there might scarcely time to obtain soundings. The flood tide also sets strongly to the eastward through the intervals of the kays, where it is high water on the full and change at 7 h. 30 m. and the tide rises 3 feet.

CAPE FLORIDA.—On BISCAYNO BAY, to the southward of Cape Florida, is a light-tower, which formerly exhibited a *fixed* light, at about 70 feet above the level of the sea, but which was burned by the Indians in the night of the 24th of July, 1839, although the tower, apparently uninjured, still remains as a beacon.

This circumstance adds to the importance of the Lighthouse on Gun Kay, described above, and affords a further inducement to keep on the eastern side of the Strait when running through it to the northward; for it is generally understood that the greater number of losses which have occurred hereabout, have been on the Florida side, from having been drifted and bewildered among the reefs and kays. Page 138.*

CARYSFORT REEF.—The light-vessel *Florida*, near an elbow of the Carysfort Reef, in or about latitude ~~25° 6′~~; exhibits two lights, one at 50 and the other at 60 feet, above the deck. May be seen at 4 leagues off. Page 211. q. v.

LOOE KAY, on the *Florida Reef*; a *white beacon-tower*, 30 feet high, which appears, at a distance, like a lighthouse, but it has a *black pole with a ball* on its top. Page 208.

KAY WEST, formerly *Cayo Hueso*: a light-tower on the West end, upon the eastern side of the entrance of the harbour, 83 feet in height, with a *brilliant fixed light*, which may be seen from 6 leagues off. Page 207.

PORT of KAY WEST.—For the use of vessels entering from the N.W., or proceeding outward in that direction, a *light-vessel* has been moored, about 8 miles from Kay West, at the junction of the North and N.W. Channels. This vessel shows one light at an elevation of about 50 feet, which may be seen, in clear weather, three leagues off.

Vessels from the westward, coming in by the *North Channel*, bring the light-vessel to bear due South, and run directly for her; and, on reaching her station, then run for the

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* See our second volume, pages 173—180; and *Nautical Magazine*, Nov. 1836, p. 647.

lighthouse on Kay West, unless the tide should be unusually low. There is a depth of 10 feet in this channel at low water, and 12 feet at high water. Those coming in by the *N. W. Channel*, bring the light-vessel to bear S.E. ¼ E. run for her and then steer for the lighthouse as above. This channel is considered as the best, it having one or two feet more water than the other. Commanders going out will merely reverse the foregoing directions.

SAND KAY, on the *Florida Reef*; a light-tower, with revolving light, at 70 feet above the sea. The light is refulgent, or in its greatest lustre, once in 54 seconds. From this light that on Kay West bears N.E. by N. 8½ miles. Page 207.

BUSH KAY, one of the *Dry Tortugas*; a lighthouse, with *fixed light*, at about 65 feet above the sea, and seen from all points at the distance of about five leagues. Page 205.

APALACHE or St. MARKS, in Florida.—The lighthouse mentioned in the note (*), page 201, has been erected on *Point Casinas*, the eastern point of the entrance of the harbour, directly toward which it leads when bearing N.N.W. For this place Mr. S. Martin, master of the brig *Wilkinson*, of Whitehaven, favoured us with the following directions, in 1836:

"Captain Martin says, "I would advise every one, on coming in for this place, to keep the Florida shore on board, and not, upon any account, to risk a fall to leeward of the Cape St. George; for, should a vessel get in between this and Cape St. Blas, and a gale of wind from the S.W. come on, she would be placed in imminent danger, between the reefs of the capes. By keeping the bay open, with a beating wind, you may safely stretch into 7 or 8 fathoms; and your lead will warn you of all danger, if kept going, as the soundings are regular, and may be obtained a long way from land.

"After making the S.W. Cape, give it a berth of at least four leagues, in order to avoid the *South Cape Shoals*, so called, and when it bears due West twelve miles from you, you will have the lighthouse about N.N.W., on which course you may safely run into 3 fathoms; but attempt to advance no farther, as the Bar is very shoal. With N.W. winds it has not more than 6 feet upon it; but S.W. winds, having a contrary effect, raise the tides to 12 and 13 feet. The Bar has a barrel-buoy at present, lying on the shoalest part, about five miles south from the anchorage.

"Extending east and west, there is a dangerous shoal lying off the Okalokana River, not inserted in Mr. Gauld's or other charts.

"Vessels drawing from 10 to 11 feet should be prepared with a good stream cable, as it may be of the greatest service on getting over the Bar, should your vessel ground, without the assistance of the stream. This was my case: I lay twelve hours at anchor, and might have laid a long time on going in, and 36 hours coming out, heaving at intervals, as the warp slackened. With perseverance you may get over, when otherwise you may have your vessel in danger. In fine weather the pilots advance in very small boats, but when blowing heavy, in a small sloop-boat.

"The distance that soundings of 5 fathoms may be obtained from the land, on coming in, is about twenty miles from the northern shore. When the wind is N.W. the harbour is not to be attempted on any consideration; with S.W. winds it may be entered safely with a vessel drawing from nine to eleven feet. The ground may be trusted for holding, in a gale of wind from the N.W., which often prevails. If the wind answers to get once over the Bar, you may run the vessel on, and with your stream anchor ahead, about 48 or 50 fathoms, you will be ready for the wind at S.W., which often causes a heavy roll of the sea, when you will be enabled to heave occasionally, as your warp slackens."

APALACHICOLA.—The Lagoon of Apalachicola is formed by the isles of S. Dionisio, (otherwise *St. Vincent*,) St. George, and Perros or Dog Island. The great river Apalachicola falls into it from the north, and on the western bank of this river is the modern settlement of the same name. Cape St. George is the S.E. point of St. George's Island, and the shore thence extends to the N.E. by E., 19 miles.* There are two passages into the Gulf, one at each end of St. George's Island, and each is distinguished by a lighthouse.

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* According to Mr. Gauld's chart of the year 1771 there were two isles in succession to the N.E. of St. George's; but it appears, from a corrected chart of 1837, that the first opening has since grown up, so as to make St. George's Island four miles longer than formerly; then follows the *Eastern Pass*, 300 yards wide, with 16 feet of depth, at high water, on the side next the lighthouse.

The

The Lighthouse of the Eastern Pass stands on the S.W. end of Dog Island, in latitude 29° 45′, and was first lighted Feb. 21, 1839. It has 14 reflectors, and its light, which is 55 feet above the sea, *revolves* once in three minutes; at a distance it appears like a star of the second magnitude. A black streak is painted around the lighthouse, at 5 feet from the top, to distinguish it from those of Apalaché and St. George. This is the channel into the port for large ships, having no bar, and 15 to 16 feet in it at low water. Ships can get up to about 12 or 13 miles of the town, to load. The gulf inside is perfectly safe, and will hold a large fleet of ships; the ground good and soft; it is an excellent place as a rendezvous for cruisers.

The lighthouse, with fixed light, on the *western extremity of St. George's Island*, is of little use as a day-mark, as it does not appear until open to the westward of Cape St. George. The Bar of this pass is about 60 feet broad and of hard sand. Vessels bound for it ought not to draw more than 12 feet of water; for, when over the Bar, if a vessel loads in the gulf, very little more will be found. A vessel of 12 feet may lie aground on the soft bottom. There are vast numbers of oyster beds all along shore.

In 1835, Captain *Jos. Cornforth*, of the brig *Harbinger*, of Newcastle, to whom we owe the following, as well as some preceding remarks, gave the latitude of St. George's light-house, by meridian altitude, with artificial horizon, 29° 37′, and longitude, by *lunars*, 84° 53′. Inside, at the anchorage for loading at, longitude by mean of several lunars, ☉ and ☽, 84° 45′ 45″, and longitude 29° 41′ 33″. When at anchor near the Bar, the latitude was 29° 34′, longitude 84° 51′.* The tide rises about two feet, but is, at times, so irregular that there is only one high water in 36 hours; the tides being very much affected by the winds. A pilot-cutter attends at each entrance.

Directions for proceeding to Apalachicola; by the same.

"From Cape St. Antonio or the Dry Tortugas, steer for the middle of St. George's Island. The soundings will be regular as you approach the land, which is extremely low all about, and they will shoalen gradually. The above course will take you to the eastward of St. George's reef, extending eight miles from the south point of St. George's Island. The soundings near the western edge of this reef are very irregular, and not to be depended upon. By running along the island you will meet the reef, and by keeping your lead going it will carry you outside; for should you fall to the westward and make Cape St. Blas, or to the westward of it and a S.W. wind come on, and blow hard, you are then between the two reefs, and the current setting along St. Blas' reef and winding into Apalachicola Bay, you will find some difficulty in keeping to windward; but, by being to the eastward of St. George's you will have the current setting to the southward and westward, toward the gulf, and farther to the eastward the stronger you will feel it going to windward.

"When I was bound to Apalachicola, on my last voyage, I made Cape St. Blas, in consequence of the chart being wrong. Although the water was smooth and the breeze fresh, it took me from 4 *p. m.* till 4 *a. m.* next morning to double the reef. At 3 *a. m.* next morning, we found our soundings vary from 3 fathoms to 7, then a quarter less 3, then 5, and so on the whole of the time." *Nautical Magazine, August*, 1835.

PENSACOLA.—A lighthouse on the *Barrancas*, within and opposite to the mouth of the harbour, with a brilliant fixed light at 80 feet above the sea, revolving once in 70 seconds, and seen more than six leagues off. Page 196.

MOBILE.—A light-tower on Mobile Point, the eastern point of the entrance. It displays a brilliant fixed light, at 55 feet above the level of the sea, which may be seen more than four leagues off. Page 194.

CAT ISLAND, off the entrance of LAKE BORGNE. By an act passed in 1827, a lighthouse was to be established on this island, as mentioned in the note, page 193; but whether completed or not, we have not been informed.

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* Captain Cornforth's latitude appears to be correct, but we apprehend that his longitude should be more to the west. At the same time we admit that the charts generally have been in error in this respect. In our chart of the Mexican Sea we make the longitude 85° 20′, as it has since been given in Tanner's large map of the United States. Mr. Gauld's chart of East Florida makes the longitude 85° 48′; here the error is enormous, and it has misled many vessels bound to Apalaché, &c. but, as the longitudes hereabout are not finally determined, every precaution should be taken by keeping toward the eastern shore, where the water gradually shoalens to the land, being an easy flat with grassy bottom; sometimes, near the parallel of 29° 50′, interrupted by masses of flat rock.

LAKE

LAKE PONCHARTRAIN. At the *Bayou of St. John*, five miles north from the city of New Orleans, a lighthouse, with a small fixed light, 48 feet above the ordinary surface of the lake; seen in a clear night about eight miles off. Pages 191, 193.

RIVER MISSISIPI.—Each entrance of the chief passes of the Missisipi is now distinguished by a lighthouse. That of the N.E. Pass has a tower, bearing north, 3 miles, from the mouth of the S.E. Pass, with a brilliant fixed light of 28 lamps, elevated 78 feet above the level of the sea. Pages 185,6.

The South Pass has a tower on a bank near the South point of the Pass, *painted black and white*, in *horizontal stripes*, with revolving light; to be left, when entering, on the starboard side.

The S.W. Pass has a tower, painted *black and white*, in *perpendicular* stripes, with a fixed light. It stands upon an islet, on the south side of the nine-feet channel, about three miles within the Bar, on the larboard side in entering. Page 190.

POINT FIERRO or Point de Fer.—A lighthouse, with brilliant *fixed* light, at 70 feet above the level of the sea. Page 182.

MEXICAN COAST.—The Cofre de Perote, the Peak of Orizaba or Orizava, and the Volcano of Tuxtla, are very remarkable and useful objects to those navigating near the Mexican Coast. They are described or noticed, respectively, in pages 160, 162, 163, 166, 7, 8, as well as in the preceding pages xxviii, xxix.

A lighthouse ~~VERA-CRUZ.~~—A round tower, painted red and white in vertical stripes, with a green top, stands on the N.W. corner of the fortress of St. Juan de Ulua, and exhibits a brilliant *revolving* light, at 79 feet above the level of the sea. ~~It has seven lamps on each side of a triangle, so as to appear in full lustre thrice in every revolution.~~ ~~Page 104.~~ Described on page 175

St. Juan de Ulua, S. ¼ W. by compass, 5 miles. *(Sketched by Lieut. John Evans (a) R.N.)*

Lighthouse. *Vera Cruz.*

Communications *for the future improvement of the Description of Light-houses, Beacons, &c., addressed to Mr.* Laurie, *will be particularly acceptable.*

SAILING DIRECTORY, &c.

*** THROUGHOUT THIS WORK THE GIVEN LONGITUDE IS THE LONGITUDE FROM GREENWICH. THE BEARINGS AND COURSES ARE THOSE BY COMPASS, UNLESS WHERE OTHERWISE EXPRESSED: BUT THOSE GIVEN THUS, [*W.S.W.*] SIGNIFY THE *TRUE;* AND THE GIVEN DIRECTION OF WIND, TIDE, OR CURRENT, IS ALWAYS TO BE CONSIDERED AS THE *TRUE.*

VARIATIONS OF THE COMPASS.

THE PRESENT VARIATION of the magnetic needle at Halifax is about 17° West. It was here found to be 17° 0′ 10″ in the year 1830, and at Sambro Lighthouse it was given as 16° 45′ in 1828. At Cape Sable, Nova Scotia, it was found, at the same time, to be 12° 24′; at St. John's, New Brunswick, it is now about 16°; off Machias Bay, 12°; Bay of Penobscot, 9°; near Cape Elizabeth, about 8°; at Portsmouth, New Hampshire, 7°; at Boston and Cape Cod, about 6°; New York Harbour, 3°; off the Delaware, 2½°; and near Cape Henry, 1½°, West.

The *westerly* variation appears to cease between Cape Henry and Cape Hatteras; for, near the latter, the variation becomes *easterly;* and in the vicinity it is half a degree East. On the Coast of South Carolina it is 3° East. At the head of the Maternillo Bank it is 5° East; near the Havanna 7°; at the West end of Cuba, 8°; at the Dry Tortugas, or West end of the Florida Reef, it is 6½° E.; in Tampa Bay, (West Coast of Florida,) 6°; near the entrance of the Missisipi, 6½°; at Tampico, 8½°; and, at Vera-Cruz, 9°, East.

SECTION I.

The FLORIDA *or* GULF-STREAM, *and the* ISLANDS *of* BERMUDAS.

I.—THE FLORIDA OR GULF-STREAM.

The FLORIDA or GULF STREAM, which controls the navigation of so vast a portion of the American coast, has been copiously described in our "*Memoir and Directions for the Atlantic Ocean;*" but as we have, since the publication of that work, acquired additional information on the subject, we shall here take a general view of it, so as to involve that information, and so to simplify the whole as to render it perfectly clear to the mind of the reader.

It is almost unnecessary to repeat that the stream (seeking a lower level) originates from the superior level of the waters of the Caribbean and Mexican Seas; that, like an immense river, it wends its course eastward between Cuba and Florida; northward by

tween Florida and the Bahamas, occupying nearly the whole breadth of the channel; and thence setting nearly parallel to the American coast, in a N.N.E., N.E., and easterly direction; until, gradually losing its impetus, it falls to the *southward*, on the meridians to the west of the Azores or Western Islands. These are its general limits as to length, which may be estimated at more than 3000 nautic miles from the Mexican Sea; but it is well known that, overflowing, its waters have, at times, extended eastward beyond the Azores, and to the coast of Spain and Bay of Biscay.

With regard to breadth, we shall, at present, observe only that its narrowest part is in the Strait of Florida, between the point named *Cape Florida* on the west, and the *Great Bank of Bahama* on the east, a distance of 35 or 36 miles. The stream occupies nearly the whole breadth of this channel, and here sets with great velocity: off Cape Hatteras, about 700 miles more to the northward, its breadth is computed as, generally, about 75 miles; but it soon after expands to an indefinite extent, northward and eastward, as will be shown hereafter.

The latter part of the month of *August* and beginning of *September* is the period in which the Gulf-Stream runs in its greatest strength and highest temperature Its greatest velocity is, at all times, in the Narrows between the *Bemini Isles* and *Cape Florida*. Here, in August, it has been found to run more than 100 miles in the 24 hours; while, at a distance westward, it has not exceeded 70 miles, and northward about 80. In October, the stream is considerably weaker; and it fluctuates, in all seasons, according to circumstances. The border of the stream, near the Cuba shore, is generally weak; and here, at times, is even a *counter-current*, running westward. On the meridian of Matanzas, the greatest velocity of the stream is on or near the parallel of 24°. The strength of its western and northern borders, in its entire and vast extent, is much greater than those on the east and south, which have invariably a tendency to spread over the ocean, and which are, therefore, comparatively weak.

In order to a more precise description, we shall now take a particular view of the stream *inversely*, and according to the order of the following work. *Primarily*, the vast portion of it which covers the ocean between the meridians of the Azores and Sable Island; that is to say, between 30 and 60 degrees west, and between the parallels of 36° and 44°: *Secondly*, the mid-portion, between longitude 60° and Cape Hatteras: *Thirdly*, the part between Cape Hatteras and the Strait of Florida: and, *fourthly*, the more rapid part of the Stream between Cape Canaveral and the Mexican Sea.

1.—*The* GULF STREAM, *between the* MERIDIANS *of the* AZORES *and* SABLE ISLAND. [30° *to* 60° W.]

This portion of the stream is the most extensive, the most variable, and the most indefinable. On the meridian of 60° we find its northern boundary, in *summer*, as high as latitude 42½°. It then advances to, and passes over, the tail of the Newfoundland Bank, and is found, even beyond this, to pursue an E. by N. course, until it reaches 44½° North, on the meridian of 43° West, whence, generally, it inclines to the southward; and, finally losing its strength, it falls to the southward, westward of the Azores, between the meridian of 40° and 30° West. In the winter, the northern edge is from one-half to a whole degree lower in latitude than in summer, and does not, perhaps, exceed, on the meridian of 60°, 41½° North.

The southern border of this portion of the stream seems to have no definable limit; it having, as already noticed, an invariable tendency to incline southward, while the great volume to the northward sets to the east. The velocities in the latter vary from more than 50 to 20 miles per day in August, decreasing eastward; and as August, with the early part of September, is the season of its greatest strength, allowance for its diminution is to be made between this period and February, when the stream is weakest.

It is almost superfluous to state that the stream may generally be traced by its *heat* or *temperature*, and comparing this temperature with that of the ocean beyond its limits. In the northern parallels this is more remarkable than in the southern; for we find that, near the parallel of 40°, between the meridians of 60° and 50°, a temperature of 79°, 78°, and 77°, is common in the month of September, and between the meridians of 50° and 40° the temperatures of 76° to 74° are found. Near the same parallel (40°) in the month of March, we find between longitudes 60° and 50°, temperatures of only 65° to 60°;

60°; and, between longitudes 50° and 40°, 59 degrees downward, and varying materially according to the approach of ices and currents from the northward.

On the meridian of 60°, the breadth of the stream, with its overflowing southerly waters, late in the summer, is about 350 miles. The *Drift Current* of the ocean, in more southerly parallels, and toward the Bermudas, runs counter to the Gulf-Stream, and though variable, more generally to the W.S.W. than to any other quarter. On the north of the stream there are various currents and ripplings, according to the winds.

We have formerly explained, in our "*Directory for the Coasts of Newfoundland*," &c. how variable the winds are commonly found in this region; and these changes of wind produce equal changes in the drift or swell of the ocean, and in the progress of the Gulf-Stream. To the change of temperature in the atmosphere, produced by the evaporation of warm water, has been ascribed the frequent hurricanes which have been encountered on and near the stream. To the southward of Newfoundland, as we have formerly shown, shifts of wind are very common, and it frequently happens that, after blowing a gale upon one point of the compass, the wind suddenly shifts to the opposite point, and blows equally strong. It has been known that, while one vessel has been lying-to, in a heavy gale of wind, another, not more than thirty leagues distant, has, at the very same time, been in another gale, equally heavy, and lying-to with the wind in quite an opposite direction.

In the autumn of the year 1782, at the time the *Ville de Paris*, *Centaur*, *Ramillies*, and several other ships of war, either foundered, or were rendered unserviceable, on or near the southern part of the Grand Bank, together with a whole fleet of West-Indiamen, (five or six excepted,) they were all lying-to, with a hurricane from West; the wind shifted in an instant to East, and blew equally heavy, and every ship lying-to, under a square course, foundered.* The circumstances next described took place about six degrees to the W.S.W. of those above-mentioned, and they afford a striking illustration of the weather which may be expected here.

Near the parallel of 40°, the brig *Recovery*, Captain T. Hamlin, on her return from New Orleans towards Greenock, 21st April, 1822, was proceeding E.N.E., towards the Grand Bank. In the first part of the twenty-four hours the weather was moderate, a breeze sprung up at *West*, and the vessel made all sail. In the middle part, strong gales succeeded, still at West, and sail was reduced. At one *a.m.*, black and gloomy, with rain. At 5, a strong gale from the *eastward* took the ship aback, and drove her astern against the old sea: it struck the boat and broke the larboard davit, and a new sea rising with the shift of wind, *the two seas met* in dreadful confusion. With a scend forward the brig dipt the jib-boom under, and broke it off in the cap; and, with the scend aft again, stove in the cabin window. While all hands were employed, trying to secure the boat, repeated seas struck her, and at length raised her above the stern, and unshipt the other davit. They then held on the tackle-fall that was fast to her, and dropt her astern, with the hope that a favourable opportunity might occur for taking her in, but she filled and broke adrift. From 5 to 8 the wind continued to blow a gale; sometimes at East, then at West, and back again repeatedly; while the vessel was quite unmanageable, and lying exposed to the contending elements. At 8 *a.m.* the easterly wind prevailed, and the vessel was then laid-to under close-reefed main-topsail, &c. Latitude at noon, by account, 40° 25′, long. 53°. At one *p.m.* of the 22d it became calm: the vessel then drifting with the sea, going round and round: but, on the next day, the wind was fair at S.W., and the brig proceeded eastward.

At one *a.m.* on the 23d, a sensible change in the atmosphere and sea was experienced: from which it was concluded that the Recovery had entered on the Grand Bank. At day-light the colour of the water was found to be altered, and a numerous quantity of ice-birds and murrs were upon it.

Again, 31st of October and 1st of November, of the same year, 1822, the Recovery, now bound to London, at 3½ degrees more to the southward, and nearly on the same meridians, met with heavy squalls, a strong gale from the N.W., and a high cross sea, which continued for nearly twenty-four hours, and to longitude 48°. Hereabout, therefore, all the seaman's spirit, vigilance, and skill, are required.

Between the meridians of 52° and 47° W. 28th to 31st July, 1823, Captain Hamlin,

* Sailing Directory for Newfoundland, &c. page 5.

in

in the ship *George IV.*, from the S.W., crossed the parallel of 40° N., all moderate and pleasant weather, with N.W. and westerly winds.

Ship *George IV.*, 3d April, 1824, homeward. "Squally and unsettled with lightning: At noon, lat. 40° 14′, long. 50° 33′. Next day, variable, with heavy showers. On the 5th, heavy showers of hail, succeeded by a smart breeze from the North. Lat. at noon 40° 28′, long. 46½°.

2.—*The* GULF STREAM, *between* LONGITUDE 60° W. *and* CAPE HATTERAS.

In this division of the Gulf-Stream its strength and effects are altogether more sensibly experienced than in the former, as may naturally be expected from its situation; but, although this portion of it has been more fully investigated than the eastern part, above described, it is still very imperfectly known. After passing Cape Hatteras, its *western border* ranges from N.N.E. to N.E., and thence bends eastward over the edge of George's Bank, &c., in or about the parallel of 40° North. Its *southern border*, in a N.E. and E.N.E. direction, crosses the parallel of 35° North, in about longitude 73° West, or 120 miles E. by S. from Cape Hatteras. Within this border, the temperature, in the month of *September*, has been found as high as 83°, and even in *December*, as high as 74°. In the central parts of the stream, *westward of longitude* 70°, in the month of *October*, the temperatures have been found to vary from 64° to 70°. Near the northern edge, in 39½° North, temperatures of 62° have been found in *February* and *April*; but, in the latter month, near the centre, or latitude 37° North, 66° have been found, and 70° at half a degree more to the South. In *May*, near the centre, 60° to 65° have been found. In *June* and *July*, 66° to 72°. In *August*, 77° to 80°, lat. 37° 20′, long. 70°. In September, near the northern edge, 71° to 74°, and near the southern edge, 83°, as above mentioned. In October, we find the temperatures reduced, 70° to 64°; but in the middle of the stream, even in *November*, (lat. 38°) 71° have been found.

The fluctuations or changes of the stream within itself are, however, so great, that no precise temperature can be given for any particular time. If we take a section of the stream in a S.S.E. direction from New York harbour, we may find, on soundings before entering the stream, in April, a temperature of 41° or 42°: On the parallel of 38°, (100 miles farther out) 62°: thence again, only 54°, increasing southward to 70°, and again diminishing to 68° and 64°, where a *counter-current* of warm water from the stream has been found. The variations of temperature *within* the stream, have given rise to the conjecture, that veins of colder water, from the West, mix occasionally with the main-stream. The *average* velocity, in the strength of the stream, exceeds 40 miles per day.

On the Bank of Soundings, between the Gulf-Stream and the coast, a breadth of about 40 miles, cold counter-currents are commonly found, setting in a S. by W. direction; more particularly in the winter-months, December, and April, at the rate of about half a knot, or 12 miles in the day of twenty-four hours.

Stream between the meridians of 70° *and* 65° *W.*—Between these meridians the *northern* edge of the stream appears as if limited by the edge of George's Bank, passing which it pursues a more northerly course, or nearly N.E. by E. to the meridian of 65°, which, in summer, it crosses above the latitude of 41°, but, in winter, considerably more to the southward.

The *southern edge* of the stream, in the same season, is found in about latitude 35½°.

The greatest strength of the stream, in August and September, is in about latitude 37° 45′, where the temperatures have been found to vary from 79° to 82°. In September, near the northern edge, 68° to 72° have been found. In March, from 44° near the northern edge, and 72° in mid-stream. In June, from 65°, on the northern edge, to 77° in the mid-stream. The velocities vary materially, even in the same month, but the average appears to exceed 30 miles per day.

Stream between the meridians of 65° *and* 60°.—This portion of the stream intervenes between the Bermudas and Nova-Scotia, and it has consequently been more examined than the tracts to the eastward and westward. In summer, its northern edge has been found in longitude 65°, on the parallel of 41° 20′; and, in longitude 60°, as already noticed,

noticed, in 42° 15′. Its southern border is indefinite, for we find warm water, in a *counter-current*, running W.S.W. in 35° 45′, with intermediate southerly offsets from the main stream.

The Temperatures.—In the spring of the year the temperatures of this region are occasionally disturbed by the presence of ices, which cool the water to a great extent around. Hence we find that, in March, the water has been cooled down to 44°, while in mid-stream, in latitude 38° 40′, it has been at 71°. In August and September, in the mid-stream, 80° and 81° have been found near the parallel of 38°, with a velocity of more than two miles per hour. In October and November, 76° to 78°. In December, 68° to 71°. In February, 59° to 64°. In May, without the northern border, in lat. 41° 10′, 44°; and within that border, in 40° 55′, 60°; in 40° 35′, 68° to 69½°. In July, 70° to 81°. The last temperature was found in lat. 39° 45′, long. 62° 35′, but here, commonly, in the month of May, it does not exceed 69 degrees. The general direction of the stream, between longitude 65° and longitude 60°, is E.N.E, and its daily velocity varies from 50 to 20 miles. It was within this limit, and near the parallel of 38°, that the ship *New York*, Captain Bennett, experienced the dreadful storm, in April, 1827, which is described in our Memoir on the Atlantic, pages 80 to 83. Temperature of the air at the time, 48°; of the water, 74°!

The strongest part of the current prevails chiefly between latitudes 37½° and 40°; longitudes 63° and 65½°, and more particularly at about 38¾°, in longitude 64°. Between the southern side of the stream and the Bermudas the currents are variable, but set, as well as on the north side, mostly to the west.

3.—*The* GULF-STREAM *between* STRAIT *of* FLORIDA *and* CAPE HATTERAS.

Between the parallels of 28° and 35° the Gulf-stream has a North, N.N.E., and N.E., direction. On the west it is bounded by the banks extending from the American shore, nearly parallel to which it runs, at varying rates, according to the season. The nearest edge of the stream, from the coasts of Georgia and Carolina, is about 40 miles; but it approaches nearer to that of Florida. The average breadth of the stream itself may be about 60 miles; less near Cape Canaveral, and more near Cape Hatteras. As it is supposed to fall down a steeply inclined plane at its exit from the Strait, its velocity here is the greatest, and has, at times, been found at the rate of five miles an hour; but the average rate of the whole is about three miles.

During the season of the Norths, or northerly winds, between October and March, the current is much weaker than in the summer months, and it is stronger than at other times in July, August, and September, owing to the breezes in the West-Indies, which drive the water into the Mexican sea.

On soundings between the stream and shore a weak counter-current generally sets to the southward; and beyond its *Eastern* border, a similar, though stronger, current sets to the S.W., as shown on our charts of the Atlantic Ocean, and which current thence rounds, in conjunction with an offset from the stream, to the south-eastward, along the north-side of the Bahama Bank, &c. This we shall notice, more particularly, in the Sailing Directions hereafter.

4.—*The* GULF-STREAM *between the* MEXICAN SEA *and* CAPE CANAVERAL.

The high temperature of the stream in this the incipient portion of its course, already noticed, (page 2,) varies from 87 to 84 and 83 degrees; and this temperature decreases so slowly that, by affecting the cold atmosphere of the N.E. region, it produces those storms which have been so frequent between Newfoundland and the Bermudas. It has heretofore been said, that the stream itself was moved by the wind, but from its vast depth and volume, it is now held that this is impossible, and that the wind affects the *surface* only, although the borders or edges may be forced by it over the adjacent sea, or the edge of the sea over the stream; either cause producing the same appearance on the surface.

The current from the Mexican sea, before entering the Strait, runs at the rate of about a mile and a half in the hour. After entering, it increases to 2½, 3, and occasionally 3½, miles. On being compressed in the narrows, between Cape Florida and the Beminis,

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it has been found to run five miles at the *maximum*, in August, and seldom below four throughout the rest of the Strait: and thence to latitude 31°, 3½ miles. This must be understood to mean the central and strongest part of the stream. See, farther, the "*Memoir and Instructions for the Atlantic Ocean*," 6th Edition, pages 127 to 143, with our recent Charts of the same, and the particular descriptions given hereafter.

On the CURRENTS of the OCEAN, generally, we find the following valuable and interesting remarks in the '*Nautical Magazine*,' June, 1832. They are extracted from a paper intitled "*On the advantages possessed by Naval Men in contributing to General Science.*"

"The various sciences which bear immediately on navigation, necessarily claim the seaman's first care, and should constitute those to which he more particularly devotes himself. While, however, his principal attention is devoted to these, he may still, when opportunities offer, materially aid the progress of other sciences, more especially those which may be supposed eventually to contribute to the advancement of navigation. All researches into the composition, temperature, and movements, of the sea, come under the latter head; indeed, it may be fairly stated, that a knowledge of the surface currents of the ocean, constitutes an important branch of nautical acquirements. We may, however, inquire how much is really known on this subject, more particularly when we recollect that the general mass of information, relating to currents, was accumulated before the local attraction of the ship was known to produce the frequently considerable aberration of the needle, which is now ascertained to be the case. It is scarcely too much to say, that every vessel, destined for distant voyages, should be provided with Mr. Barlow's plate,* by which the important errors arising from this cause are avoided. There can be little doubt that many minor currents have been stated to exist solely in consequence of inattention to this local attraction; for, if those on board any given ship consider that they are steering one course, while, in point of fact, they are steering another, there is always considerable danger that the difference in the position of the ship, determined by proper observations, and that obtained from dead reckoning, will be set down to current, when no such current may exist. We may also inquire what is known of under-currents. The notices of under-currents are exceedingly rare, and it is still more rare that any experiments have been made upon them. Capt. Beaufort's experiment of sinking a line in clear water, with shreds of differently coloured bunting at every yard, to ascertain the directions of the under-currents,† seems never to have been repeated.

"To quit the subject of currents, which it is not our present object to discuss, we will glance at the state of our knowledge respecting the temperature and saltness of the sea. These subjects have already engaged the attention of many naval men; indeed, nearly all our information on this head is derived from them. First, with regard to the temperature of the sea. The surface temperature will naturally, in a great measure, depend on that of the superincumbent atmosphere; so that, if the latter be variable, we should expect the former to be variable also, while it would remain more uniform in climates less exposed to great vicissitudes. Various causes, however, tend to make the temperature of the sea a much more complicated subject than from this view might be anticipated. Thus, every current, moving from a colder to a warmer region, or from one that is warm to a cold latitude, alters the temperature which any waters may be supposed to possess under any warm climate. The Gulf-Stream is a case in point; the waters become heated within the tropics, and then flow northward, over and through waters of an inferior temperature. Hence it has been inferred, and with reason, that great advantages would accrue to navigation, from numerous observations on the temperature of this stream, at different parts of its course.‡ It would also be advantageous to ascertain to what depths this heated water descends, in various northern parts of the

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* Vide 'Atlantic Memoir,' (6th Edit.) page 338.—ED.

† Beaufort's Karamania. 'Atlantic Memoir,' note (*), page 315.

‡ As a reflow, or counter-current, sets down by the Florida Reefs and Kays to the S.W. and West, and consequently brings down colder water from the north, it would be curious to ascertain, in any vessel crossing the two currents, the temperatures of each, where they pass each other, as also the temperature close to the coasts.

Gulf-

Gulf-Stream; for, as the waters of this stream are, by being heated, rendered specifically lighter than the cold waters over which they flow, it will probably be found that, towards the northern part of their course, they will have much less depth than to the southward. Experiments to ascertain this fact would require considerable care, particularly as the observer would have to contend with the laws which govern the greatest density of water; consequently, such experiments would be best made in the winter months, when the difference between the surface temperature of the sea, and the temperature of the air, would be most marked. Although we possess many notices of the surface temperature of the ocean, in various latitudes and longitudes, the observations hitherto made are far from being sufficiently numerous for the purpose of obtaining any very important or useful results. The surface temperature of the sea is, therefore, a subject which may readily engage the attention of those who constantly traverse the ocean in various directions, more particularly when the necessary experiments are so easy, merely requiring a little care.*

"The greatest depth at which the temperature of the ocean has been taken, is 1300 fathoms, in lat. 3° 20′ South, and 7° 39′ East. In this experiment, Captain Wauchope found a temperature of 42° Fahrenheit, the surface-water being at 73°† The same observer obtained a temperature of 51° at 966 fathoms, in lat. 10° North and long. 25° West, the surface-water being at 80°. Captain Sabine found in lat. 20° 30′ North, and long. 83° 30′ West, a temperature of 45½° at 1000 fathoms, the surface-water being at 83°.‡ M. Lenz, obtained 36½° at 974 fathoms, in lat. 21° 14′ North, and long. 196° 1′ West, the surface-water being at 79½°. The latter experiment gave a lower temperature for deep sea-water than had before been obtained in the tropics, or in the temperate zones; and should these, and some other experiments to the same effect, be confirmed by other observers, it would prove that the greatest density of sea-water is at least below 37° of Fahrenheit.§

"The depths at which streams of water, produced by tides and currents, are felt, is little understood; neither is the depth at which waves act upon the bottom by any means ascertained."

II.—The BERMUDAS' or SOMERS' ISLANDS.

These Islands, as shown in our "*Memoir on the Atlantic*," are shaped in the most irregular manner imaginable, and occupy an extent of about 16 miles N.E. by E. and S.W. by W. Captain Hurd places *Wreck Hill*, the westernmost extremity of the land, (represented in the frontispiece of this volume,) in latitude 32° 15′ 20″, and longitude

* It is exceedingly easy to ascertain the surface temperature of the sea; it merely requires that a bucket of surface-water should be hauled upon deck, at any given hour or hours of the day, and a *good* thermometer be plunged into it, taking care that the thermometer be not exposed to the rays of the sun, or so close to the sides of the bucket, as to take its temperature, which may be different from that of the water. Let these observations be duly entered in a book kept for the purpose, together with another observation, made with the *same* thermometer in the shade, on deck, and immediately *before* it was plunged into the bucket; and at the end of the voyage a valuable series of observations, on the surface temperature of the sea, in certain latitudes and longitudes, and of the temperature of the air at the same time, will have been collected. It may be necessary, perhaps, to caution some of our readers against many of the thermometers sold at the outports, as they are frequently very imperfect instruments.

† 'Atlantic Memoir,' page 342.—Ed.

‡ 'Atlantic Memoir,' note (*), page 345.—Ed.

§ The instrument employed by M. Lenz was a large hollow cylinder, closed at both ends by valves which opened upwards. To one of the valves a thermometer was attached, enveloped by a substance which conducted heat with great difficulty, so that it could scarcely lose the temperature which it had acquired below, more particularly being surrounded by a body of water drawn up from thence. The more common method has been to sink a register thermometer, with a metallic case and graduation, (metals speedily acquiring the temperature of the surrounding medium,) and marking the change of temperature which had taken place. Thus, if the index marking the maximum had not been moved forward, while the minimum index had been driven back, it was considered that the temperature had diminished to the point marked by the latter index. These instruments are far from expensive; but, as it is essential to have them exact, they should always be obtained from well-known makers.

64° 50′,

64° 50′, but it has been placed in the charts three minutes more to the East, as the result of several combined observations.

In the volume above-mentioned, we have given a general description of, and particular directions for, these islands, which render it unnecessary to enlarge upon them here, and we shall only select, for the convenience of the reader, a few passages which may be taken, in connection with what has been said on the Gulf-Stream; adding to these, *Remarks made on the islands, and which have been obligingly communicated, by Lieut. John Evans* (a) *of the Royal Navy, with others by Mr. Edw. Dunsterville, M. R. N.*

The dangerous rocky reefs extend, in some parts, eight leagues from the islands, and render them very difficult of access.* What renders the approach more dangerous is, that the land is low, and the currents around are variable, but mostly from the S.W.

The banks to the S.W. were surveyed, in 1829, by the officers of H. M. sloop *Columbine*. The northern extremity of the *Inner Bank* lies in 32° 6′ North, and 64° 53′ West; the S.W. in 32° 0′ North, and 65° West. The least water found was 29 fathoms, corally and rocky bottom. On the edges are 40 fathoms. To the S.W. of this bank is another, called the *Outer Bank*, the N.E. end of which is in lat. 31° 59½′, long. 65° 2½′; the S.W. end in 31° 57′, and 65° 5′. The least water found on this bank was from 33 to 47 fathoms, rocks and coral.

In the vicinity of the islands, hurricanes and tempests are frequent, owing to the proximity of the isles to the variable limit of the trade and other prevalent winds.

There are four SIGNAL STATIONS on the islands: one at *St. George's*, the head quarters, on the east; another, centrical, at *Mount Langton*, near the town of Hamilton; another on the *S.W. coast*, at three miles from the S.W. end of the islands; and another at *Gibbs' Hill*, on the west coast. At each a party of soldiers is stationed. The naval establishment is on *Ireland Island*, in the west, which is the general rendezvous for the king's ships. It forms the western side of a semi-circle, named *Grassy Bay*, and is distinguished by the Commissioner's house, with a flag-staff, &c.

The principal anchorages are *St. George's Harbour*, *Murray's Anchorage*, on the north side of St. George's Island, and the *Great Sound*, near Ireland Island. St. George's Harbour has a bar, on which there are only 19 feet of water, with high spring-tides, but within is a depth sufficient for the largest ships. The entrance to Murray's Anchorage is intricate, but it is well buoyed. The towns are St. George's and Hamilton, each of which has a mayor and other civic officers.

Hamilton is a free port—

It has been recently noticed that "The Bermudas, with respect to America and the West-India Islands, may be valued in the same scale of importance as Gibraltar and Malta, with reference to the continents of Europe and Africa; and it is, most certainly, politic and wise in the government, so long as our possessions in New Brunswick, Nova-Scotia, the Canadas, and Newfoundland, and also the West-India Islands, are considered worth preserving, to have a central spot, where there shall be an extensive naval depôt, to be available in case of a future war," &c.†

REMARKS ON THE BERMUDAS, BY LIEUT. EVANS.

To give an idea of the peculiar situation and natural security of these beautiful islands, it may probably be sufficient to remark, that there is not, perhaps, an insular groupe on any part of the globe more completely protected by nature from the encroachments and effects of a boisterous ocean than the Bermudas.

From the Eastern Head, (*St. David's,*) where lies the main channel of entrance, to the North Rock, there are connected reefs and rocks, over which the sea continually breaks; and thence (where there is an intricate channel of egress) to the S.W. breakers, a chain of rocks, shoals, and breakers, form an immoveable barrier against the fury of

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* The *William*, transport, was lost on the S.W. reef, in 1829. General Sir Hilgrove Turner, the governor, and his lady, were passengers in her, but were happily saved, with all the crew; timely assistance having arrived from the islands.

† *United Service Journal*, 1st October, 1832, to which the reader is referred for a display of the political and local advantages of the islands.

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the waves; the south side, from S.W. to S.E., although not so guarded, is steep and rocky, and a shelf stretches along shore, of sufficient solidity to be a protection against the turbulent element.

The westernmost projecting headland is *Wreck Hill*, it stands insulated on its base, is cone-shaped, and very dark coloured. When seen from the S.W. it appears flattened at its summit, but from the south as peaked: it is the land looked for, and first seen, when approaching the isles from the west.

The next particular guide is *Gibbs' Hill*, which is the highest and most conspicuous eminence observable near the S.W. part of the coast; it is a smooth mount, entirely clear of trees, with a ~~signal-staff and telegraphic~~ post on its summit. To the westward, and contiguous to it, is a table-land, crowned with a grove of dark tall cedars.

Between Gibbs' Hill and Castle Island, to the E.N.E., there are several sandy mounts, having the appearance of white cliffs, and at moon-light may be mistaken for breakers. One of these is much more conspicuous than the others, being of greater extent, and without any verdure upon the summit. To the north of the great sand-hill stands *Tucker's Town*, and, at two miles farther, easterly, is *Castle Harbour*, in the entrance to which are several islets and rocks: on the largest of these is an old castle, which gives name to the harbour. These islets are remarkable for the whiteness of the cliffs and the dark verdure of the turf which covers them.

The coast here presents a very picturesque appearance of land and water; the telegraphic hill over St. George's is a pleasing object in the perspective. This may be termed the S.E. face of the islands, and is considered as in the best parallel to make them in from the eastward.

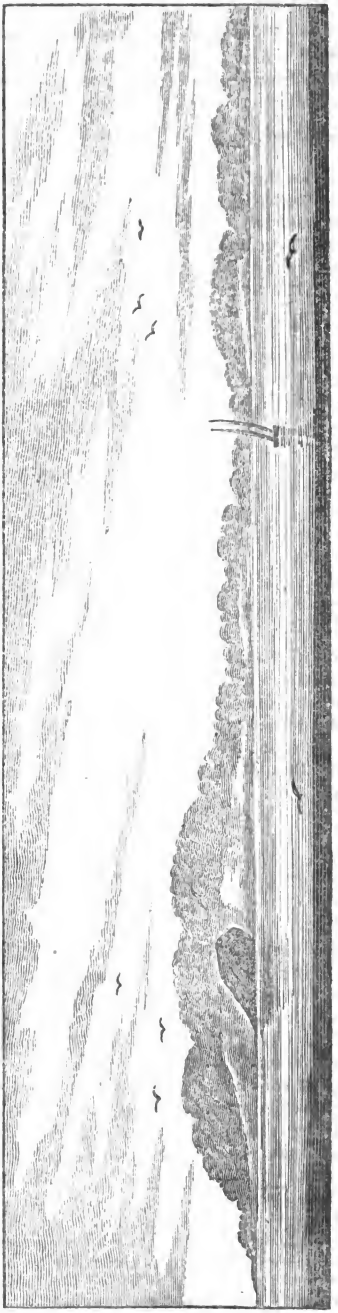
In the winter, with the wind from the N.E., there is a strong set of the water to the S.W. on the south side, and it is very tedious and unpleasant to turn to windward, the wind blowing in heavy squalls at intervals. I have, however, known South and S.W. winds to prevail during most part of the winter months.

Southampton Water, or *Port Royal Bay*, in the S.W., has a depth across it for boats only.

In Castle Harbour there is good anchorage; but it is not used by men-of-war. A frigate, many years ago, was wrecked in her endeavour to enter.

In working up from the S.W. end to Castle Harbour, ships may stand within a mile of the shore; and small craft until the bottom is seen. There are some small reefs and ledges along the line of shore, but they are very near the beach.

St. David's Head is next seen, in the form of a round bluff, covered with foliage, and, when the land is opened to the northward, a large cave will appear to view beneath the head, as shown in the above figure. A reef extends from this bluff, about half a mile off shore; the sea generally breaks over it.



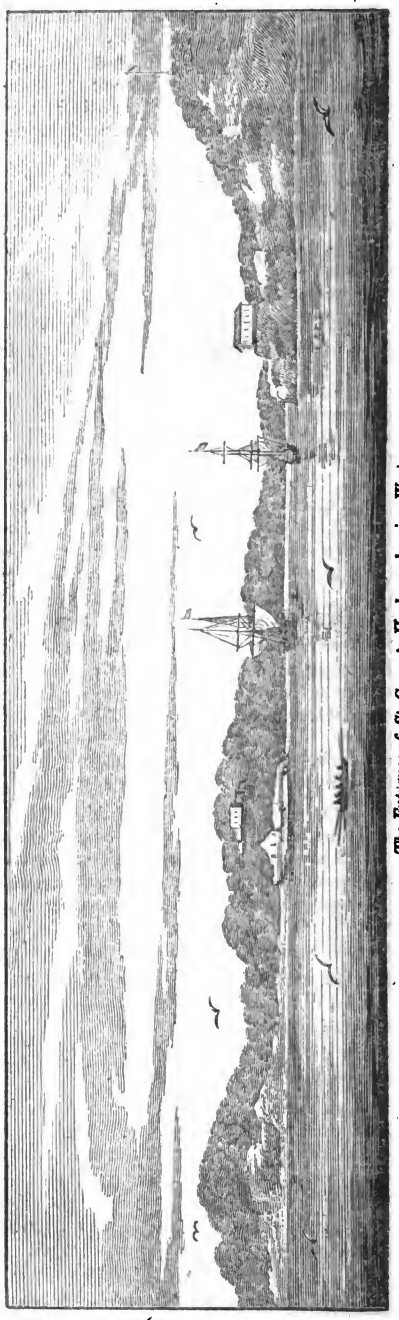
St. David's Head and Cave, bearing S.W.

Vessels waiting for Pilots may run in to the N.E. of the bluff, and heave-to with their heads off shore; the bottom is, hereabout, visible, but no danger need be apprehended on that account.

The pilots are the most expert I ever met with.* A good look-out is kept by the artillery-men stationed at the telegraphic hill, and delay seldom takes place.

Beyond St. David's Head the land trends to the N.W. *St. George's Harbour*, (the best among the islands,) is formed by several islands, and a curve in the larger island of the same name: its entrance lies between Fort Paget and a small kay to the eastward; the harbour is land-locked, well sheltered from the stormy West and N.W. winds, with a good depth of water over a bottom of stiff pipe-clay; but there is a flat rock lying across the channel leading to the entrance, (which it were very desirable should be broken away by means of a steam machine,) which impedes large ships from entering; and the channel within alters from S.W. to W.N.W. If the rock in question was gotten rid of, ships of the line might warp in from the Hole to the harbour, or be towed in and out by a steam-tug. The vicinity to the open sea alone gives it a decided superiority to the anchorage at Grassy Bay, if there were nothing else to recommend it.

St. Catharine's Bluff is the north-eastern extremity of St. George's Island and of the isles in general. There is a fort upon it, and a battery for point blank shot, thrown up by order of Sir James Cockburn. Beyond this head, to the westward, is *Murray's Anchorage*, one of the most unpleasant places in the world to ride in during the winter season. I have been, for several weeks, riding out a N.W. gale in a frigate here, pitching bows under; and the *Driver*, sloop of war, is said to have carried away her bowsprit, in consequence of its getting under the cable, when she was in the act of plunging, during a gale here. The *North Rock*, at about eight miles in the offing, appears, from this anchorage, through a telescope, like a ship's boat, with three lug sails: there is a passage of egress for large ships through the reefs near the rock; but it cannot be attempted without a fixed leading wind: boats are then placed on either side of the channel to guide the pilot.



The Entrance of St. George's Harbour, bearing West.

* I was in a frigate. Thomas Smith, a clever black man, picked out through the devious passage in masterly style, under double-reefed topsails, and going eight knots. He had nerve and quick eye-sight, qualities essential to a Bermudian pilot.

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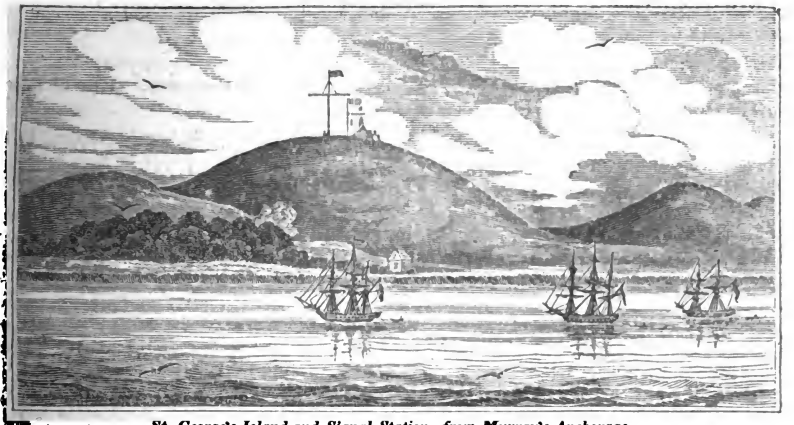

St. George's Island and Signal Station, from Murray's Anchorage.

The Tanks lie abreast of Murray's Anchorage, just above a small cove, wherein is the landing-place. There is not a spring in the isles, and ducks are abundant. I had to remark at Nice, (in Italy,) where the earth is saturated with springs, that there was not a duck to be seen. [Fresh beef is good, and supplied thrice a-week.—E. D.]

From the anchorage at Grassy Bay, ships, unless they happen to be favored with a leading wind, are generally one day working up to Murray's anchorage, a distance of nine miles; and there they must wait until the wind proves fair, before they can get to sea round St. Catharine's bluff, and through the intricate channel which leads to St. David's Head. Even with a fair wind to or from Ireland Island (on which the new dock-yard is situated) ships are liable to strike upon the heads of rocks every where scattered about: this happened to a ship I was in, with a most expert pilot on board; the weather being cloudy, the rocky spots did not show themselves sufficiently clear to be altogether avoided.

Navigation to the Bermudas. (*Lieut.* Evans, continued.)

"On the 12th of April, 1811, having left the frigate, I took charge of a prize schooner for Bermudas, and anchored at St. George's on the 6th of May following. On the 4th at noon, in latitude 31° 44′, longitude by account 62° 10′, considering that we might be set to the west by current, I determined to get into the parallel of 32°, and then put the vessel's head to the eastward until day-light. By midnight we had run up a course N. 79° 45′ W. 43 miles; which gave our situation, by account, 31° 52′ N. and 63° 3′ W. I left directions with the mid of the watch to tack at 12 h. 30 m.; and at that time the sand-hills were seen N.N.W. 9 or 10 miles; which showed that we were, by *account*, a degree and a half to the east of the true longitude: the southern part of the land being in 64° 33′. I have no doubt we were set to the west by current, but something must be admitted for erroneous allowances, as we had often contrary gales and heavy seas to contend with. In a dark and dismal night, with very severe lightning and thunder, (the schooner full of gunpowder,) I recollect, whilst the wind was blowing a storm at North, that it shifted in a second to South, and nearly set us down; the gaff of the reefed topsail having caught between the ratlines of the rigging. I was therefore most happy when we dropped anchor in the snug harbour of St. George."

We were lying-to on the starboard tack.

Remarks *on the* Bermudas, *and* Passages *to and fro, by* Mr. Edw. Dunsterville, *Master of his Majesty's ship* Ranger, 1830, 31.

In July, 1830, from the Maternillo Bank, on the N.W. of the Bahamas, to the Bermudas, the winds prevailed from the S.E. to S.W. Light breezes and cloudy, with heavy rain at times. Found no current.

The Bermudas, from the S.W., at 5 leagues distant, appear as an assemblage of detached high islets, on the south part of which the signal-post on Gibbs' Hill is seen, being

being erected on the highest land in the islands. Hence we ran along-shore, at one and a half to two miles off.

During our stay at these islands, the winds prevailed for seven weeks from S.S.E. to S.W., which is invariably the case here during the summer months. Rise of spring-tides about 3 feet 6 inches. H. W. at 6 h.

When a signal for a pilot is made from ships in the offing, it is telegraphed by the signal-posts throughout the island.

To lay through the Narrows, near St. George's, it is requisite to steer from N.W. to W.N.W., and from St. Catharine's Point (the N.W.) point of St. George, S.W. by S. and S.W. till Ireland Island bears about W. by N., whence haul to that course. In every course avoid all brown or dark patches, which are corally rocks, with little water on them. In the channel are from 6 to 7 fathoms. The buoys invariably point out all the rocky heads, which in some parts are numerous. In the latter end of September, fine North and N.E. winds: the thermometer at 74°, which had been for the last two months from 80° to 84°. The Ranger anchored at Murray's anchorage in 10 fathoms, chalky bottom, St. Catharine's Point E. ½ N. about one mile and a quarter.

The *Ranger* sailed from Bermudas for Jamaica, on the 5th of October. Winds prevailing from the N.N.E. Fresh breezes and fine weather. In latitude 22° 30′ and longitude 70° found a current setting to the southward, one mile and a half in the hour.

Again, on the 26th of March, 1831, we sailed from Jamaica for Bermudas. Passed through the Caycos Passage on the 31st. Longitude of the West Cayco 72° 27′ West, by three chronometers. This isle has one hummock on its eastern part; the other parts are low and even. Winds from the eastward and fine weather.

Winds light from the eastward until we arrived at Bermuda, when it blew strongly from the southward and westward for a fortnight. On the 11th of April anchored off Ireland Island. Vertical rise of spring-tides here about 5 feet; neaps 2 or 3. H. W. at 8 h.

Going through the Narrows at Bermuda.—In going in, the white buoys lie on the starboard side; the black on the larboard: of course, in going out, vice versa. Fair way buoys are chequered, one at each entrance. The courses through are from W.N.W. to N.N.W. ½ W. The best anchorage at Murray's anchorage is in 9½ fathoms, off St. Catharine's Point, with the east signal-staff in St. George's S. by E. ¼ E., off shore one quarter of a mile. Between St. Catharine's Point and Mount Langton (the Governor's house) keep the shore well on board; say one quarter of a mile or less, passing in-shore of the buoys: but, when going through the Narrows, off the admiral's house, going betwixt the buoys. In clear weather the dangers show themselves.

At three miles N.E. by N. from St. David's Head is the rock, nearly even with the water's edge, called Mills' Breaker; from this the reef trends to the N.N.W.

19th May, 1831. *Sailed for Halifax, in Nova-Scotia;* winds prevailing from the southward. In crossing the Gulf-Stream, in 64° West, did not experience any set to the eastward. In latitude 43° and long. 64°,* sounded, and had 60 to 45 fathoms, coarse sand and pebbles, stones with broken shells. At times, in 45 fathoms, rocky bottom, which agrees with the Admiralty chart: then, in running to the northward, deepened the water to 120 fathoms, mud. Thick foggy weather. On the 27th arrived at *Halifax*, which, at a little distance in the offing, had a very thick fog; but, on drawing near the land, it dispersed; and frequently it was fine clear weather on the land, whilst at sea, in the offing, it was thick and foggy. Therefore, by sounding regularly, you may, from a voyage, approach the land in from 40 to 50 fathoms, on most part of the coast; particularly in the summer season, when it seldom blows strong.

I shall not dwell on the beautiful harbour of Halifax. Suffice it to say, that it is as good a one as possibly can be for any class of vessels.

We again arrived at Bermuda on the 27th of September, and had winds prevailing on the passage from the southward and S.W.

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* On the S.W. edge of the Sable Island Bank.—Ed.

SECTION II.

The AMERICAN COASTS, *from* SABLE ISLAND *and* HALIFAX *to* BOSTON, CAPE COD, &c.

I.—SABLE ISLAND AND BANKS OF NOVA-SCOTIA.

SABLE ISLAND.—The *southernmost part of Sable Island* lies in or about latitude 44° 0′; the west end in longitude 60° 32′ 30″.* On the days of the new and full moon, it is high water along the south shore of the island at half an hour after 8 o'clock, and it flows till half an hour past 10 o'clock on the north side, and till near 11 o'clock in the pond. Common spring-tides rise seven feet perpendicular, and neap-tides four. The flood sets in from the S.S.W. at the rate of half a mile an hour, but it alters its course, and increases its velocity, near the ends of the island. At half-flood it streams north, and south at half-ebb, with great swiftness, across the north-east and north-west bars; it is therefore dangerous to approach without a commanding breeze. The north-east bar runs out E.N.E. about four leagues from the eastern extremity of the island, all which is very shoal, having in few places more than 2, 3, or 4, fathoms of water, whence it continues East and E. by S., deepening gradually to 12, 15, and 18, fathoms, at the distance of 8 or 10 leagues, and shapes to the South and S.E., sloping gently to 60 and 70 fathoms. To the northward and eastward it is very steep, and, in a run of three miles, the water will deepen to 130 fathoms. Abreast the body of the isle, the soundings are more gradual. The shoal ground of the north-west bar shapes to the westward, and deepens gradually to 70 fathoms of water, at the distance of 20 or 25 leagues from the isle; and winds easterly and southerly, until it meets the sounding of the north-east bar. The quality of the bottom, in general, is very fine sand, with a few small transparent stones; to the northward, and close to the north-east bar, the sand is mixed with many black specks; but, near the north-west bar, the sand has a greenish colour. The north-east bar breaks in bad weather, at the distance of 8 and 10 leagues from the island; but, in moderate weather, a ship may cross it, at 5 leagues distance, with great safety, in no less than 8 or 9 fathoms of water; and, if the weather be clear, the island may be seen thence very distinctly from a boat. The north-west bar breaks, in bad weather, at seven, and sometimes eight, miles from the island; but, when the sea is smooth, ships may cross it within the distance of four miles, in 7 fathoms of water. [*These bars are here described as they were found by* M. Des Barres: *but, being composed of shifting sands, repeated storms, and the violence of the sea, have, in the course of years, considerably altered their form and extent.*]

Along the north and south sides of the island are many spits of sand, nearly parallel with, and within a mile from, the shore. Vessels may anchor on the north side of the island, between the spits, and not be liable to be driven off by southerly winds. On the south side, it is boldest off the body of the island, having 10 or 12 fathoms of water, within a mile of the shore; but towards the bar it is more shoal, and dangerous to approach; for the currents, which are uncertain, are, in a great degree, influenced by the winds which have preceded. The surf beats continually on the shore, and, in calm weather, is heard several leagues off. Landing on this island, with boats, is practicable on the north side, after a continuance of good weather only. The whole island is composed of white sand, much coarser than any of the soundings about it, and intermixed

* In 1829, Mr. John Jones, master of H. M. ship *Hussar*, published some observations on Sable Island, which represent it as considerably more to the eastward than the charts, &c. of M. Des Barres. Mr. Jones gives the east end of the island in lat. 43° 59′ 16″, long. 59° 48′, and the west end in lat. 43° 56′ 42″, long. 60° 17′ 15″. To the error (or *presumed error*) in position many wrecks have been attributed. The charts, from M. Des Barres, &c., give the N.E. extremity in 44° 7′, and 60° 0′. In approaching, therefore, all caution is required.

with

with small transparent stones. Its face is very broken, and hove up in little hills, knobs, and cliffs, wildly heaped together, within which are hollows, and ponds of fresh water, the skirts of which abound with cranberries the whole year, and with blueberries, juniper, &c., in their season; as also with ducks, snipes, and other birds. This sandy island affords great plenty of beach-grass, wild peas and other herbage, for the support of some horses, which are running wild upon it. It produces no trees; but abundance of wreck and drift-wood may be picked up along shore for fuel. Strong northerly winds shift the spits of sand, and often even choke up the entrance of the pond, which usually opens again by the next southern blast. In this pond are some seals, with flat-fish, eels, &c., and, on the south-west side, lies a bed of remarkably large muscles and clams. The south shore is, between the cliffs, so low, that the sea breaks quite over in many places, when the wind blows on the island. The *Ram's Head* is the highest hill on this island; it has a steep cliff on the north-west, and falls gently to the south-east. The Naked Sand-hills are 146 feet in perpendicular height, above the level of high-water mark, and always appear very white. *Mount Knight* is in the shape of a pyramid, situate in a hollow, between two steep cliffs. *Mount Luttrell* is a remarkable hummock on the top of a large swelling in the land. *Gratia Hill* is a knob at the top of a cliff, the height of which is 126 feet perpendicular, above high-water mark. The *Vale of Misery* is also remarkable, as is *Smith's Flag-Staff*, a large hill, with a regular ascent every way. From the offing, the south side of the island appears like a long ridge of sandy cliffs, lessening towards the west end, which is very low.

In the year 1803, *the legislature of Nova Scotia* passed a liberal vote of money for the purpose of commencing an establishment on Sable Island, in order to prevent shipwreck, and to protect all persons and property which might happen to be cast ashore. Commissioners were consequently appointed for executing this important trust, and a superintendant to reside on the island, empowered as a justice of peace, surveyor and searcher of impost and excise, and authorised by a warrant to take charge of the island, shores, and fisheries, and of all wrecks found there, in cases where persons are not saved competent to take the care of such property. Instructions were given to him, that persons saved with property are to have the full care, charge, and possession, of it, and be allowed to export it in any manner they may think proper. Every aid and assistance to be afforded, and a receipt given specifying the property saved, the aid received, and referring the salvage or reward to be ascertained by the commissioners at Halifax; but neither fee or reward is to be taken, nor property disposed of, upon the island. There were, also, ordered four able men and proper boats, with materials completely fitted to erect a house and good store. Also cattle, sheep, goats, and poultry, with clothing, provisions, &c. A gun is placed on the island, to answer such as may be heard from vessels at sea. Signals were to be hoisted on the island, and buildings have been erected, particularly on the west side. The greatest care has been taken to extend aid as much as possible, to prevent misfortune, and to relieve it; to secure property from loss, and from extortion for saving it, by referring it, in all cases, to the commissioners in Halifax, from whose respectability we are assured that equity and charity will be united in directing and deciding. The superintendant and boatmen are paid and subsisted, and all necessaries furnished, by government, that no claims or demands may be made by them upon the unfortunate. But, as extraordinary risk, enterprize, and exertion, in so good a cause, deserve recompense, such cases are to be exactly stated to the commissioners, who are to adjust the measure and mode of extra reward to be allowed and paid.

The Establishment, formed in 1804, at present consists of a superintendant and about ten assistants, who constantly reside on the island, and have in charge a competent supply of such articles as may be useful, with good boats, &c. They continually perambulate the island, and attend the several signal-posts and flag-staffs, intended to direct vessels, and the huts to shelter the sufferers. There never were any inhabitants on the island but those connected with the establishment.

The island is regularly visited by a vessel from Halifax, to convey supplies, and bring away those who may have been thrown upon its shores. The supply of stores and provisions is abundant, so that 300 persons, at once upon the island, have been liberally assisted and supplied with necessaries.*

* Colonel Bouchette's '*British Dominions in North-America*,' 1832, Vol. ii. p. 72.

This

This establishment was founded by the Provincial Legislature, at the recommendation of the late Sir John Wentworth, then Lieut.-Governor, and has since proved the means of saving many lives. In every year vessels have been lost. The years 1822 and 1823 were particularly marked; as, from *L'Africaine,* (French frigate,) the ships *Hope* and *Marshal Wellington,* 429 persons were saved, who, after escaping the dangers of the surf, would otherwise have perished with hunger.*

There are three houses on the island; of which one is occupied by the superintendant, and stands on the north side, at eight miles *(nautic)* from the west end: the next is on the north side, at four miles from the western extremity, and 2¼ eastward from the west end of the lake, and 4¼ miles W.N.W. from the superintendant's: the other house, uninhabited, is on the south side, at nine miles from the east end, close to the eastern extremity of the lake, and 7½ miles E.S.E. from the superintendant's. These houses are not in sight from the beach, but at 300 to 400 yards from it, and at the same distance also from the margin of the lake. Those uninhabited contain provisions, tinder-box, matches, &c. There are several fresh-water ponds, as shown on the particular chart, but wherever the surface is moist, fresh-water may be obtained by digging from one to three feet deep.

The N.W. Bar now extends 15 miles to the N.W. from the west end of the island. The whole of it breaks in bad weather. The bank to the west and this bar appear to be still increasing. The tide on the bar sets North, slacks at half-flood, and turns to South before high-water: its rate is two knots. The soundings hereabout are particularly irregular to the N.W. and N.N.W. with very variable currents.

The N.E. Bar extends 7 leagues E. by N., and is about two miles wide. This bar appears to be travelling north-eastward. In gales of wind the whole of it appears like one line of breakers, but in more moderate weather they do not extend beyond 14 miles, and a vessel may cross at 16 miles in 7 fathoms. The flood-tide here sets at N.N.E. at the rate of 5 knots; the ebb 3 knots or less, and is scarcely felt with a spell of South and S.W. winds.

Strong gales cause annual shiftings of the sand on both bars, which, in the course of years, must alter their form and extent. Mariners approaching the isle are warned to keep the lead going, and never to approach the south side nearer than in 10 fathoms, nor the north side nearer than in 25 fathoms.

On the south side, the Current, in shoal water, with prevailing South and S.W. winds, sets rapidly eastward, until it reaches the end of the N.E. bar; it then unites and blends with the St. Lawrence' Stream, which passes the bar in a S.S.W. direction, and runs strongest in April, May, and June. Mr. Darby says, I have sufficient reason for believing that the Gulf-Stream on the parallel of 42° 30′, running E.N.E. occasions the St. Lawrence' Stream, then running S.S.W., to glide to westward. The strength of this stream has never been noticed, and three-fourths of the vessels lost have imagined themselves to the eastward of the island, when, in fact, they were in the longitude of it. On the north side of the island, the currents are variable, but mostly eastward.

The Soundings decline regularly on the south side of the island only; on approaching it from any other bearing whatever, comparatively deep water will be found, as 10 fathoms or more, close to danger. In foggy weather, vessels should not approach the north side or point of either bar nearer than in 25 fathoms. Two belts encircle the isle; the outer, at a mile from shore, has 2½ fathoms on it. These belts are increased by gales, and high winds, which, raking the island, drift the sand from them to the bars.

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* The Hope and Marshal Wellington, above mentioned, were lost in June, 1823. Of these losses a rather indistinct account was given in the London newspapers of and about the 23d of July. According to this account, the vessels were totally lost, and bedded in the sand, but the greater part of the people was saved. Previous to the catastrophe, southerly and scant winds only prevailed, and these were succeeded by a thick fog; so that the shore could not be seen at the distance of half a cable's length.

The Hope was lost on the 4th of June, at 5 *a.m.*, on the eastern side of the island, and a strong current from S.E., during an interval of scant or calm, had carried her north-westward: for, by observation on the 3d, she was in lat. 43° 30′, 30 miles to the southward, and 90 to the eastward, of the island. Two days after the Marshal Wellington's boats came in with the crew: she also got upon the N.E. bar and filled.

The

The island being composed of loose light sand, high gales frequently alter its outline and appearance.

Should a vessel happen to be ashore in a fog, situation unknown, lower a boat when prudent, and observe the following notice. If breakers extend N.W. and S.E., you are on the N.W. bar: if they extend W.S.W. and E.N.E., you are on the N.E. bar: if they extend a-head North, and then lie East and West, you are on the South side: if South, and then lie East and West, you are on the North side.

The prevailing winds about the island are from East to South and from South to West. With these the north or leeward side is comparatively smooth, and, therefore, should be sought. There is a swashway on each bar, shown on the chart, and lives may be saved by passing through and thus getting to leeward. There is no risk in moderate weather, but if the surf should appear too dangerous, land as you can, or try to weather the bar altogether. Having once got to the northward of the bar, haul up S.E. or W.S.W., as the case may be, for the land, and take the boat ashore as near the house as may be convenient. The semi-circular form of the north side is favourable for boats, as under the windward curve a lee is afforded from East and West winds; but, with a fresh north wind, this form is against a boat getting off the land: therefore, if ashore, on the North side, push the boat right before the sea for the land rather than risk getting to leeward by crossing either bar.

If ashore on the south edge of either bar, with the wind North, land on the south side.

If ashore on the N.E. bar in tolerable weather, with the wind about West, you may land at the east end without crossing the bar; and, *vice versa*, if on the N.W. bar, and, owing to the inner belt, the time of high-water is the best for landing.

After landing, if owing to a fog you cannot judge of your situation, so as to shape your course to one of the houses, seek the lake and then proceed.

The preceding description, excepting a little alteration, is from the observations of Mr. *Joseph Darby*, master of the schooner *Two Brothers*, and ten years in the service of the island. (Halifax, 8th April, 1824.) Mr. Darby has also given a list of ships and vessels, wrecked upon the coast and bars, thirty-four in number, between 1802 and 1824; the greater part upon the southern shores.

The NOVA-SCOTIA BANKS extend nearly 70 leagues, in a westerly direction. From the Isle of Sable, they are from 20 to 25 leagues wide, and their inner edges are from 14 to 18 leagues off shore. They are intersected by narrow winding channels, (the bottom of which is mud,) running N.W. and S.E. Between these banks and the shore are several small inner banks, with deep water and muddy bottom. The water deepens regularly from the Isle of Sable, to the distance of 22 leagues, in 50 fathoms, fine gravel; thence proceeding westward, the gravel becomes coarser: continuing westward to the western extremity of the banks, the soundings are rocky, and shoalen to 18 and 15 fathoms of water: Cable Sable bearing N. by W. distant 15 leagues.

The south-west extremity of *Banquereau*, or *Bank Quero*, lies 17 leagues E.N.E. ½ E. from the east end of the Isle of Sable. This bank extends E. by N. 35 leagues, and is near 8 leagues in width; its shoalest part is about 5 leagues from its eastern extremity, in 16 and 18 fathoms of water, slimy sand and clams: whence it deepens regularly every way to 60 and 70 fathoms, towards the edges of the bank.

This bank is steep-to; and, from its soundings on the north side, you fall immediately into 90 or 100 fathoms of water, black mud; and, on the south side, into 120 fathoms.

It may be observed, generally, that the soundings all along the Nova Scotian Coast, between Cape Canso to the E.N.E. and Cape Sable to the W.S.W., are very irregular; from 25 to 40 and 50 fathoms. In foggy weather, do not stand nearer in-shore than 35 fathoms, lest you fall upon some of the ledges. By no means make too bold with the shore in such weather, unless you are sure of the part of the coast you are on; for you may, otherwise, when bound for Halifax, fall unexpectedly into Margaret's or Mahone Bay, and thus be caught with a S.E. wind.

At the entrance of the harbours and rivers on the coast, salmon is taken from April until August; and, from one to two or three leagues out to sea, cod, halibut, polluck, haddock, rays, and mackarel. Herrings are taken in the bays and harbours, in the months of June and July, and tom-cod all the year round.

The

The weather on the coast is frequently foggy in the spring and some part of the summer; in particular at the distance of 4 or 5 leagues from the shores. On approaching nearer, the weather is found more clear; and, with the wind from the land, it is perfectly clear and pleasant.

II.—HALIFAX HARBOUR, *and the* COAST THENCE, WESTWARD, *to* CAPE SABLE.

DESCRIPTION OF THE COAST, &c.—The land about the Harbour of Halifax, and a little to the southward of it, is, in appearance, rugged and rocky, and has on it, in several places, scrubby withered wood. Although it seems bold, yet it is not high, being to be seen, from the quarter-deck of a 74-gun ship, at the distance of no more than 7 leagues; excepting, however, the high lands of *Le Have* and *Aspotogon*, westward of Halifax, which are to be seen 8 leagues off. The first, which is 12 leagues W.S.W. from Cape Sambro', appears over Cape Le Have, and like little round hills of unequal height. Aspotogon, when bearing N.W. by N., appears directly over Margaret's Bay, 5½ leagues westward from Cape Sambro': it is rather a long high land, nearly level at the top, and rising above the land near it. When bearing North, distant between 5 and 6 leagues, Sambro' lighthouse will bear E.N.E. distant 7 leagues.

The lighthouse on Sambro' Island is remarkable, it being a high tower on that island, which is small and rocky, lying at 3¾ miles to the S.W. from Chebucto Head, on the S.W. side of the entrance into Halifax Harbour.* Chebucto Head has a remarkably rocky and barren appearance.

There are two other lighthouses on the coast westward of that of Sambro'; the first is on Coffin's Island, at the entrance of Liverpool Bay; the second is on Cape Roseway, at the entrance of Shelburne Harbour. Of these, one may be distinguished from the other by noticing that the lantern of Sambro' lighthouse, exhibiting a *fixed* light, is elevated 210 feet above the level of the sea; while the light on Coffin's Island is only 90 feet; the latter is *revolving*, and appears full at intervals of two minutes: the lighthouse on Cape Roseway exhibits *two* lights, there being a small light at about one-third from the top of the building. Cape Roseway is about 30 leagues to the W.S.W. from the lighthouse of Sambro'.

The island and lighthouse, near the harbour of Halifax, lie in latitude 44° 30′ N., and longitude 63° 31′ W. of Greenwich.

HALIFAX HARBOUR.—The harbour of Halifax is one of the finest in British America. A thousand vessels may ride in it in safety. It is easy of approach, and accessible at all seasons. Its direction is nearly North and South, and its length twelve miles. Its upper part, called BEDFORD BASIN, formed as shown in the chart, is a beautiful sheet of water, containing about eight square miles of good anchorage.

On the eastern side of the entrance is the cultivated island now called *Mac Nab's*, formerly *Cornwallis Island*, a name which, in propriety, *it ought to have retained.* Above this, and nearly in the centre of the harbour, is a conical islet, called *George Island.* The latter, which has a tower on it, is fortified, and protects the city of Halifax.

On a spit of gravel, called *Maugher's Beach*, extending towards Point Sandwich from Mac Nab's Island, there is now a *lighthouse*, intended for the express purpose of leading vessels up the harbour, clear of the shoals hereafter described. This useful light appears of a *red* colour, and is 58 feet high above the level of the sea. Originally it was obscured on the eastern side, but lately has been made visible from every point of the compass.

Northward of Maugher's Beach, in the cove now called Mac Nab's Cove, is good anchorage in from 9 to 4 fathoms, mud. The best spot is in 7 fathoms, with the beach and Point Sandwich in a line, and the tower on George Island touching the N.W. part of Mac Nab's Island.

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* The appearance of it is given on the Chart of Nova-Scotia.

The promontory, called CHEBUCTO HEAD, bounds the entrance of the harbour on the west. At 3½ miles above this head, on the western side, is a singular indent, called HERRING COVE, occupied by about forty Irish families, who subsist by fishing and piloting. Small vessels here lie perfectly sheltered in shoal water. The coast between this and Chebucto Head is wholely of rock.*

HALIFAX, the third town of British America, is situated at the distance of eight miles above Chebucto Head, on the western side of the harbour, and upon the declivity of a hill *(Citadel Hill)* which rises to 240 feet above the level of the sea, and has on its summit three flag-staffs, serving as an excellent mark for the harbour. In its recently improved state, Halifax has not less than 14,500 inhabitants. It is a free warehousing port, and contains two episcopal churches, two presbyterian and two baptist meeting houses, with three chapels, one Roman catholic, one methodist, and one Sandemanian. Its other public structures are the government-house and the provincial ~~building~~ Hall; the latter a fine structure.

The naval yard is above the town: the commissioner's house and other buildings are its ornaments. As a government establishment, it is, of course, in excellent order. To the northward of it is the naval hospital, with its requisite appendages. On the hill, above the hospital, is a square stone-building, the residence of the naval commander-in-chief. The Citadel Hill, over the town, commands a prospect of the harbour and surrounding country.

The village of DARTMOUTH, opposite to Halifax, is thinly settled; but the lands behind it are in a very improving state, and there are some fine farms belonging to the descendants of the original German settlers.

The LIGHTHOUSE of SAMBRO', already noticed, has seven lamps, and exhibits a *fixed* light. Its lantern is elevated 210 feet above the level of the sea. A small party of artillery are stationed here, to attend to signals, with two twenty-four pounders, as alarm-guns: by the attention of these men several shipwrecks, it is said, have already been prevented.†

Within and about two miles from the lighthouse there are several dangers, generally known under the name of the EASTERN and WESTERN LEDGES. Of these the westernmost is the BULL, a rock above water, which lies about three-quarters of a mile S.E. by E. from Pendant Point, with the lighthouse bearing E. 7° S., 2¼ miles.

To the south-eastward of the Bull, at the distance of a mile, lies the ledge called the HORSES, with the lighthouse bearing E. by N. one mile and three-quarters distant.

The S.W. rock or ledge lies with the lighthouse N.E. 1⅛ mile.

The HENERCY ROCK, with 8 feet over it, lies with the lighthouse N.N.W. ¾ W. 2 miles. To the E.N.E., at a mile from this, is another, the *Lockwood*, of 12 feet. Both are, of course, exceedingly dangerous to those approaching within a short distance.

The SISTERS, or *Black Rocks*, commonly called the *Eastern Ledge*, lie to the E.S.E. three-quarters of a mile from the lighthouse. Chebucto Head N.N.E. will clear them to the eastward.

Besides the rocks above described, the BELL, a rock of 18 feet, lies at a quarter of a mile from shore, with the extremity of Chebucto Head N. by E. ½ E. [*North,*] three-quarters of a mile.

WITHIN the line of CHEBUCTO HEAD, on the S.W., and DEVIL'S ISLAND, on the N.E., are several rocks and ledges, but the situation of each is marked by a buoy, as shewn on the Charts. Of these the first is *Rock Head*, which lies with Chebucto Head S.W. 2¼ miles, and Devil's Island N.E. ½ E. 2¼ miles.

The second is the *Thrum Cap*, a reef which extends from the south end of Mac Nab's Island, and which occasioned the melancholy loss of the Tribune frigate, with 250 brave men, on proceeding for the harbour from the eastward. The thwart-mark to clear it

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* "Sept. 7, 1831, arrived at Halifax. On this coast I have observed much dew fall. The wind generally hauls round to the southward about noon."—*Edw. Dunsterville.*

† See the particular chart of the Harbour and Environs of Halifax.

is,

is, the easternmost land kept in sight from the deck, a ship's length clear to the southward of Devil's Island, and bearing about E.N.E. or E. by N., when steering West or W. by S., according to the distance of the ship from the island.

The *Lichfield Rock*, which lies towards the western side, has only 16 feet over it at low water. The marks for it are, George's Island just open to the eastward of Point Sandwich, and the passage between the Devil's Island and main open, bearing E. by N.

Above the Lichfield Rock, on the same side, at a mile above it, is the rock called *Mars' Rock*. It lies with Point Sandwich bearing North, half a mile, and nearly in a line with it and the west side of George Island.

A reef, called the *Horse-Shoe*, extends from Maugher's Beach, on the west side of Mac Nab's Island. It is dangerous and must be carefully avoided.

Half-way between Maugher's Beach and George Island, on the opposite side, is a shoal, extending to the S.E. from Point Pleasant, nearly one-third of the channel over, but having a buoy on its extremity. The thwart-mark for the buoy is a little islet, (on the west shore, at the entrance of the N.W. arm,) with a remarkable stone upon the hill, appearing like a coach-box, and bearing W.S.W.

Between Maugher's Beach and Point Pleasant shoal is a middle ground of 4½ and 5 fathoms, distinguished by a buoy. This middle ground extends North and South a cable's length, and is about 30 fathoms broad: as you fall off to the eastward of it, there may be found from 7 to 13 fathoms, muddy bottom. On the west side are from 10 to 14 fathoms, coarse and rocky bottom.

Reid's Rock, having 12 feet over it, lies in-shore, about half-way between Point Pleasant and the south part of Halifax. The thwart-mark for it is, a farm-house in the wood over a black rock on the shore, bearing W. by S. Opposite to Reid's Rock is a buoy on the spit extending from the N.W. end of Mac Nab's Island.

DIRECTIONS FOR THE HARBOUR.—On approaching the Harbour of Halifax from the westward, advance to the eastward so as to pass the lighthouse at the distance of a league; taking care not to approach too near to the *Henercy* or *Lockwood Rocks*, already described. When the lighthouse bears N.N.W. ¾ W. you will be in a line with the Henercy Rock, and with it N.W. ¾ W. in a line with the Lockwood.—With the lighthouse W.N.W. you will be clear to the northward of both, and may proceed N. by E. 4 miles, which bring you off Chebucto Head. Here you will bring the leading mark on, which is the flag-staffs on Citadel Hill open of Point Sandwich, and bearing N. by W.; and, by keeping them thus open, you will pass clear of the Lichfield and Mars' Rocks on the west, as well as of the Rock Head and Thrum Cap on the east. When nearly up to Sandwich Point, which is bold-to, keep Chebucto Head well in sight, without that point; and this direction, kept on, will lead in the fair-way up to George Island, leaving Point Pleasant Shoals on the left, and the Horse-Shoe, or Shoal of Mac Nab's Island, on the right.

Or, *when abreast of Chebucto Head*, or when Sambro' Light bears W.S.W., the Light on Maugher's Beach should never be brought to the westward of North. Keeping the light from North to N. by E. will lead clear of the Thrum Cap Shoal, from the buoy on which the lighthouse bears N. ¼ W.

In order to obtain the advantage of this light, vessels advancing from the *eastward* must keep Sambro' Light open to the southward of Chebucto Head, and until the light opens on Maugher's Beach, which will then bear N. ¼ W. They will then be to the westward of Thrum Cap Shoals, and may shape a course up the harbour, always keeping the light on the beach open, and on the starboard bow.

Those advancing from the westward will see the light on Maugher's Beach when they are as far to the eastward as Chebucto Head, by keeping it open well on the starboard bow; it will then lead them up to the beach.

George Island may be passed on either side, and you may choose your anchorage at pleasure, in from 13 to 6 fathoms, muddy bottom. From George Island to the head of Bedford Basin there is no obstruction to shipping.

Ships of war usually anchor off the Naval Yard, which may be distinguished at a distance by the masting sheers. Merchant-vessels discharge and take in their cargoes at the town-wharfs.

Small

Small vessels, from the eastward, occasionally proceed to Halifax by the S.E. passage, within Mac Nab's Island. On the shoalest part of the bar of sand, which obstructs this passage, there is, however, but 8 feet at low water. Above the bar the depth increases to 5 and 10 fathoms, bottom of mud.

On ENTERING the HARBOUR from the EASTWARD, especially with an easterly wind, particular caution must be taken to avoid the Thrum Cap and Rock-Head. In proceeding this way, steer West, W.N.W., or N.W., according to the wind and your distance from the shoals, until George Island, up the Harbour, is open a sail's breadth to the westward of Mac Nab's Island; then haul up for Sandwich Point and York Redoubt, until you see the steeple of St. Paul's Church, in Halifax, a ship's length open to the eastward of Judge Brenton's house, a remarkable one, fronting the south. This mark, kept on, will lead clear of Point Pleasant Shoal, and in a fair-way between Maugher's Beach and Sandwich Point: whence you may steer directly for George Island, and pass in on the east side, if the wind will permit.

In turning to windward, give the upper or inner part of Maugher's Beach a berth of one cable's length, in order to avoid the Horse-Shoe Spit, that runs from the north part of the beach to the distance of one cable and a half's length. You may stand to the Sandwich Point side to within two ships' length, that being bold-to; but stand no farther over to the westward, to avoid Point Pleasant Shoals, than keeping St. Paul's church open to the eastward of Judge Brenton's house, on the south shore, as above-mentioned.

When arrived thus far, put in stays; and, standing to the eastward, keep Little Thrum Cap Island, *(now Carrol's,)* a red bluff, open of Mac Nab's Island: having this mark on, put in stays again, and you will thus go clear of the N.W. spit of Mac Nab's Island.

COAST WESTWARD OF HALIFAX.—The little harbour, or cove, called CATCH HARBOUR, which lies to the westward of Chebucto Head, has a bar across the entrance, having 9 feet over it at low water, with breakers when the wind blows on the shore. Within it are 3 and 3½ fathoms. In 1817, twenty families were settled here, and supported, principally, by supplying the market of Halifax with fish.

GENERAL REMARKS ON THE COAST WESTWARD.

FROM Halifax, westward, to Margaret's Bay, the country appears, from the offing, very rocky and broken; the shore is steep-to, and bounded with white rocky cliffs. The high lands of Aspotogon, on the eastern side of Mahone Bay, are most remarkable; the summit is very conspicuous; it is 438 feet high, and may be seen at the distance of 7 or 8 leagues. Proceeding westward, from Mahone Bay, the rocks which surround the shore are black, with some banks of red earth. *Cape le Have* is an abrupt cliff, 107 feet high, above the sea: it is bald on the top, with a red bank under it, facing the south-westward. Between this cape and Port Medway, there are some hummocks within land, about which the country appears low and level from the sea; and, on the shore, white rocks and stony beaches, with several low bald points: hence, to Shelburne Harbour, the land is woody. About the entrance of Port Latour, and within land, are several barren spots, which, from the offing, are easily discerned; thence, to Cape Sable, the land appears level and low, and on the shore are some cliffs of exceedingly white sand, particularly in the entrance of Port Latour, and on Cape Sable, where they are very conspicuous from sea.

BEARINGS *and* DISTANCES *of* PLACES, *between* HALIFAX *and* CAPE SABLE, *&c.*

From Sambro' Lighthouse to	*Magnetic.*	*Miles.*	*True.*
Chebucto Head	N.E.	— 3¾ ..	N.N.E. ½ E.
Three Fathoms Harbour	E.N.E.	— 15 ..	N.E. ½ E.
Jedore Head	E.N.E ½ E.	— 23 ..	N.E. by E.
Jedore Outer Ledge	East.	— 25½ ..	E.N.E. ½ E.
Cape le Have	W. ¾ S.	— 36 ..	S.W. by W. ½ W.

From

From Sambro' Lighthouse to	*Magnetic.*	*Miles.*	*True.*
Liverpool Lighthouse	W. by S.	— 52	S.W. by W. ½ W.
Cape Sable	W.S.W. ¼ W.	—113	S.W. ¾ W.
Liverpool Lighthouse to			
Cape le Have	E.N.E. ¼ E.	— 16	N.E. ⅜ E.
Pudding-pan Island	E.N.E. ½ E.	— 3½	N. 60° E.
Liverpool Western Head	S.W.	— 3	S.S.W. ½ W.
Liverpool Fort Point	N.W. by W. ½ W.	— 3½	W. by N.
Isle Hope	S.W. ¼ S.	— 14	S.S.W. ¼ W.
Shelburne Lighthouse to			
Berry Point	N.E. ½ N.	— 2¾	N.N.E.
the South end of the Westernmost Rugged Island	E.N.E ½ E.	— 7½	N.E. by E.
Thomas' or Eastern Rugged Island	E. ½ N.	— 10¼	E.N.E.
the S.W. Breaker of Rugged Island	E.S.E. ¼ E.	— 7½	E. ¼ S.
the Jig Rock (6 feet)	S. by E. ¼ E.	— 1	S.S.E. ¾ E.
Cape Negro	S.W. ½ S.	— 8	S.S.W.
Cape Sable to			
Baccaro Point	E.N.E. ¾ E.	— 7½	N.E. by E. ½ E.
the Bantam Rock	East.	— 7	E.N.E. ¾ E.
the Brasil Rock	S.E. by E.	— 8½	E.S.E. ¼ E.
the Blonde Rock	W. ¼ N.	— 16½	W. by S.
the South Reef of Seal Island	W. by N.	— 16½	W. ¼ S.
the North end of Seal Island	W.N.W.	— 17	W. ¾ N.

DESCRIPTION AND DIRECTIONS.

SAMBRO' HARBOUR.—The Harbour of Sambro', which has thirty families on its borders, lies at one mile and three-quarters to the N.N.W. of the Lighthouse Island. Off its entrance is the Bull Rock, already noticed, and there are two other rocks between the latter and Sambro' Island. The best channel into it is, therefore, between Pendant Point and the Bull Rock; but vessels from the eastward may run up between Sambro' Island and the Inner Rock. Within the entrance is an islet, called the Isle of Man, which is to be left, when sailing inward, on the left or larboard hand. The anchorage is above this islet, in 3 fathoms, muddy bottom. This is a place of safety for, and much resorted to by, coasters in bad weather.

PENDANT HARBOUR, *(Port Affleck* of *Des Barres,)* the next to the westward of Sambro', has good anchoring ground. The islands on the west side of it are bold-to, and the ground is likewise good. The depths are from 10 to 5 fathoms.

TENANT'S BAY, (or *Bristol Bay,*) between Pendant Harbour and Tenant's Basin,* presents to the eye of a stranger the rudest features of nature. It is obstructed by several rocks and islets, but, once gained, it is extensive and safe; and, in bad weather, (the only time vessels of consequence should enter it,) the dangers show themselves. The tide flows here, on the full and change days, at VII¼ h. and rises about 8 feet.

PROSPECT HARBOUR.—This harbour is about three miles westward of Tenant's Bay, and is separated therefrom by a large cluster of islets and broken land, the outer extremity of which is named *Cape Prospect* or *Mars' Head.* On advancing, the appearance is rugged; but the harbour is extensive and safe; and, in rough weather, the dangers in the vicinity show themselves. The inhabitants, about twelve families, are settled on the left, or western side, and subsist by the fishery. Two small islands, on that side, form a little cove, and on these are the stages. The entrance is between an islet, called *Hobson's Nose,* on the S.E., and a rock, named *Dorman Rock,* on the N.W. There is a breaker, with 3 fathoms over it, at the distance of two cables' length to the east of the latter. Within the harbour there is a good anchorage for the largest ships; and, for smaller vessels, in 4 fathoms, where the bottom is of stiff blue clay.

* Shuldham Harbour of Des Barres.

SHAG HARBOUR, *(Leith Harbour* of *Des Barres,)* is the next westward of Prospect Harbour; it is the N.E. arm of an inlet, of which the N.W. arm is *Blind Bay*, in both of which excellent anchorage may be found. In the common entrance without lies, without the *Hog*, a sunken rock, having only 6 feet of water over it. This rock bears S.E. ½ E. nearly a mile and a half from Taylor's Island. *(Inchkeith.)* In rough weather, with the wind on-shore, the sea breaks over it; and, in fair weather, it may be perceived by the rippling of the tide. There is a good channel on either side. That on the west side is most difficult, there being a ledge extending half a mile towards it, from the eastern extremity of Taylor's Island.

DOVER PORT lies on the western side of the entrance to Blind Bay. It is formed by Taylor's Island, and several other islands. The best passage in is to the eastward of these, giving them a moderate berth. The anchorage is within the body of Taylor's Island, in 10, 9, or 7, fathoms; bottom of mud. In sailing in, give a berth to the reef, which extends S.E. half a mile from Taylor's Island.

Between the Harbour of Halifax and this place, the coasts are craggy, broken, and barren: the shore iron-bound and steep, and a tree is scarcely to be seen. Fish, however, are abundant, and the harbours are most conveniently situated for the fishery.

MARGARET'S BAY.—This bay is a beautiful sheet of water, about 25 miles in circumference, in length nine, and two miles wide at the entrance. On every side are harbours capable of receiving ships of the line, even against the sides of the shores. To the west of the entrance stands the High Land of Aspotogon, already noticed, the summit of which, bearing N.W., leads directly to the mouth of the Bay. The shores at the entrance are high white rocks, and steep-to. On the western side is a narrow islet, called *Southwest* or *Holderness Isle*, the south point of which, according to M. des Barres, lies in latitude 44° 34′ 25″, and longitude 63° 55′ 30″. This islet is a body of rock, about 50 feet in height, and bold-to on all sides.*

On the Eastern side of the Entrance, 300 yards from *East Point*, is a rock uncovered at low water: and there is, at a mile and a half south from Southwest Island, a ledge called the *Horse-shoe*, almost covered and surrounded with breakers, and which bears from the south point of Taylor's Island W. by N., 4¾ miles: the depths around it are 6 and 8 fathoms.

On the Eastern side of the Bay, at 2¼ miles to the northward of East or May Point, is an irregular projection called *Peggy's Point*. At a mile beyond this is an isle named *Shut-in Island*, which is 208 feet high, covered with wood, and bold-to; but there are two ledges between it and the inner part of Peggy's Point, over which the depths are 8 and 9 feet. In a southerly gale the water is smooth on the lee side of the island, and the bottom good. At a mile and a half N.E. ½ N. from Shut-in Island is a smaller isle, named *Luke's*, forming a complete break to the sea, and used as a sheep-fold. There is good anchorage on the N.E. side of it, smooth in all seasons; and this is, therefore, a useful place of shelter.

Within two miles northward of Luke's Isle is a cluster of Islets, the *Strelitz Isles* of Des Barres,† but the principal of which are now called *Jollimore's Isles*. A reef extends north-eastward from the latter, and the land within forms the harbour called *Hertford Basin*, wherein the depths are from 7 to 10 fathoms, and the anchorage is safe under the lee of Jollimore's Isles.

HEAD HARBOUR, (or *Delaware River*,) in the N.E. corner of the Bay, is an anchorage of the first class, and so perfect a place of safety, that a fleet may be moored in it, side by side, and be unaffected even by a hurricane. The lands are high and broken. Ten families were settled in the neighbourhood in 1817. The islands, at the entrance, are used as sheep-folds.

HUBBERT'S COVE, *(Fitzroy River,)* in the N.W. corner of the bay, may be entered

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* At nearly half a mile E. by N. from the body of the isle, there is, however, a single rock, having 4 fathoms over it, on which the sea breaks in rough weather: but it can hardly be deemed a danger.

† It has often been lamented that the bulk and price of the showy work of M. des Barres never suffered it to come into general use; and, consequently, the names which he assigned to different points and places have remained generally unknown.

by

by a stranger, by keeping the western shore on board; and a ship dismasted or in distress may here find perfect shelter. If without anchors, she may safely run aground, and will be assisted by the settlers.

At the entrance of the cove, towards the eastern side, is a ridge of rocks called Hubbert's Ledge *(Black Ledge)*; this is about 100 fathoms in extent, and covered at high water. It may be passed on either side, keeping the land on board, the shores being bold.

Between Hubbert's Cove and Head Harbour are several indents, with projecting rugged points. From these places small vessels take building-sand and lime-stone, the latter being of a superior quality. Salmon abound here; and, in the lakes above, are vast quantities of fine trout.

Long Cove, *(Egremont Cove,)* 2 miles to the southward of Hubbert's Cove, on the western side of the bay, is a good anchorage with a westerly wind. An excellent stream, on which is a saw-mill, falls into this place. Hence, southward, the coast is bold and rugged; but there is no danger, excepting one small rock of six feet of water, close in-shore.

At a mile to the northward of Southwest Isle, in the entrance of the Bay, is the little harbour called *N.W. Harbour*, sheltered by an islet *(Horse Isle,)* and within which is tolerable anchorage for small craft: both the channels into it are good. Several families are settled here. Above this harbour the west shore is rugged and bold.

About 5 miles S. $\frac{1}{4}$ W. from the point of land which separates Margaret's and Mahone Bays,* lies Green Island. It is small, and lies 7 leagues W.N.W. $\frac{3}{4}$ W. from abreast of Sambro' lighthouse, in latitude 44° 27′ 35″, and longitude 63° 58′ 30″.

MAHONE BAY is divided from Margaret's Bay by the peninsula, on which stand the high lands of Aspotogon, whose appearance, in three regular swellings, is very remarkable at a great distance in the offing. This bay is nearly 4 leagues in extent, from N.E. to S.W., and contains numerous islands and rocks, the largest of which, *Great and Little Tancook*, are on the eastern side.

Without the entrance, is *Green Island*, above mentioned, another small isle, called *Duck Isle*, on the opposite side, and a larger, more to the west, named *Cross Island*. Between the two latter is a channel, one mile in breadth.

The *Outer Ledge*, which always breaks, lies at one mile and two-thirds N.E. $\frac{1}{4}$ N. from the east end of Duck Island, and W. $\frac{1}{2}$ N. 3 miles from the west point of Green Island. Another danger, the *Bull Rock*, lies at a mile to the southward of Great Tancook, and bears from Green Island N.W. $\frac{1}{2}$ W. $4\frac{1}{2}$ miles; from the east end of Duck Island N. $\frac{3}{4}$ E. 4 miles: this rock is visible at one-third ebb, and from it the S.W. end of Flat Island bears E. by N., 1200 fathoms distant, and the west point of Tancook Island N. by W. a mile and three-quarters distant.

Farther up, N.W. by W., 400 fathoms distant, from the west point of Tancook Island, lies *Rocky Shoal*; within which and Tancook Island is deep water. The *Coachman* is a blind ledge, a mile and a quarter north of Great Tancook, and visible at low water only.

At the head of Mahone Bay is the town of Chester, which was settled in 1760, and is surrounded by a country of fine appearance, and abounding in wood. On approaching the bay from the eastward, the first land seen will be Green Island, which is round, bold, and moderately high. Hence, to Iron-bound and Flat Islands, the distance is about 3 miles; passing these, which are bold-to, you proceed to and between the Tancook Islands, which are inhabited: the passage is good, and there is anchorage under the isles, in from 12 to 7 fathoms.

On proceeding towards Chester, the only danger is the ledge called the Coachman, above mentioned. You will just clear the eastern side of this ledge by keeping the east ends of Great Tancook and Flat Island in one; and the western side by keeping the west end of Iron-bound Island open with the west point of Little Tancook. The islands off the town render the harbour smooth and secure, the depth in which is from 5 to 2 fathoms.

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* Charlotte and King's Bays, in M. des Barres' Charts.

Chester

Chester church open, on the west of Great Tancook, leads clear to the westward of the Bull Rock, and down to Duck Island.

In Margaret's and Mahone Bays it is high water on the full and change at VIII h., and the vertical rise is from 7 to 8 feet.

MALAGUASH OR LUNENBURG HARBOUR.—This is a place of considerable trade, and its population, in 1817, amounted to 4,200 persons. Vessels are constantly plying between Lunenberg and Halifax, carrying to the latter chord-wood, lumber, hay, cattle, stock, and all kinds of vegetables. The harbour is easy of access, with anchorage to its head.

To sail in, you may pass on either side of Cross Island,* but the channel on the west side of the island is the best. In sailing through the northern channel, be careful to avoid the shoals which extend from the north side of the island, and from Colesworth Point on the opposite side. In sailing in, through the channel to the westward of the island, steer in a midway between it and *Point Rose;* and, before you approach the next point, which is *Ovens' Point*, give it a berth of two or three cables' length; for, around Ovens' Point is a shoal, to which you must not approach nearer than in 7 fathoms. From Ovens' Point, N.E. three-quarters of a mile distant, lies the *Sculpin* or *Cat Rock*, dry at low water. Your leading-mark, between Ovens' Point and the Cat Rock is, a waggon-road-way (above the town of Lunenburg) open to the westward of Battery Point, which mark will keep you clear of a rock of 4 fathoms at low water. The best anchoring ground is on the west shore, opposite the middle farm-house, in 7 fathoms, muddy bottom. Your course in, is from N.N.W. to N.W. by N. In this bay, with good ground-tackling, you may ride out a S.E. gale very safely. The harbour, which is to the northward of the Long Rock and Battery Point, is fit only for small ships of war and merchant-vessels. Along the wharfs are 12 and 13 feet of water; and, at a short distance, from 20 to 24 feet, soft mud.

The latitude of Cross Island, according to the observations made by Mr. Backhouse, is 44° 20′. M. des Barres gives it as 44° 23′ 25″, in longitude 64° 5′ 10″. This island is in a state of cultivation, and on the N.E. is a small nook, in which coasters may lie securely. The west and south sides of the island are bold; and, at two miles from the south side, is an excellent fishing-bank, having over it from 14 to 17 fathoms.

From Green Island the east end of Cross Island bears W.S.W. distant 6 miles. From the east end of Cross Island that of Iron-bound Island lies S.W. by W. ¼ W., 6¼ miles: and from the latter Cape le Have bears S.W. by W. ½ W., 4½ miles.

CAPE LE HAVE, described on page 20, stands at the distance of 12 leagues† W. ¾ S. from Sambro' Lighthouse. At one mile S.E. ¾ S. from this Cape lies the *Black Rock*, 10 feet high, and 100 long, with deep water around it, 10 to 14 fathoms: and, at 2¾ miles W.S.W. ½ W. from the Cape, is an elevated rocky islet, called *Indian Isle*, which lies at a mile from shore, off the S.E. point of *Palmerston Bay*, or Broad Cove: this point is 2¼ miles westward of Cape le Have.

Palmerston Bay‡ is two miles in breadth. At the head of it, to the N.W., is *Petit River*, a settlement formed by the French, and the farms of which are in fine condition. From Cape le Have, westward, to Medway Head, an extent of 11 miles, nearly W.S.W. the land is, altogether, broken and craggy.

PORT MEDWAY, or MEDWAY.—Medway Head, (*Admiralty Head* of Des Barres,) at the entrance of this port, is laid down in latitude 44° 10′ 30″, and longitude 64° 29′. The entrance may be known by a hill on the head, and a long range of low rugged islands extending true South, forming its eastern side: it is seven-eighths of a mile broad, and has a depth of 10 to 4 fathoms. This port is now considerable, both in its navigable capacity and its consequence as a fishery: in 1817 it contained fifty families, or 276 persons. Five saw-mills, on the river above, are constantly employed.

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* Cross Island is the Prince of Wales's Island in M. des Barres' Charts.

† Not *eighteen* leagues, as stated by Mr. Lockwood.

‡ Mr. Lockwood says, "*What Des Barres calls Palmerston Bay.*" In all instances of places not previously named, we see no good reason why a name, once imparted, and not an *improper* one, should not be established. We have, therefore, retained several names imparted by M. Des Barres, which do not appear in some late charts.

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The land to the eastward of the harbour is remarkably broken and hilly. The *South-west Ledge*, or outer breaker, on the starboard side, without the entrance, lies S.E. ½ S. about a mile and a half from Medway Head. The *Stone Horse*, a rock dry at low water, lies E. by S. one-third of a mile from the S.W. breaker.

When approaching from the eastward, you will avoid the S.W. Ledge, on which the sea breaks in rough weather, by keeping the Lighthouse on Coffin Island open of the land to the eastward of it. The course up the harbour is N. ½ E. and W.N.W.

LIVERPOOL BAY.—*Western Head,** on the S.W. of the entrance of Liverpool Bay, is represented in latitude 44° 3′ 20″, and longitude 64° 37′.

This bay has room sufficient for turning to windward, and affords good anchorage for large ships with an off-shore wind. The deepest water is on the western shore. Western Head, or Bald Point, at the entrance, is bold-to, and is remarkable, having no trees on it. Herring Cove, on the north side of the bay, affords good shelter from sea-winds, in 3 fathoms, muddy bottom, but it is much exposed to a heavy swell, and has not room for more than two sloops of war. At high water, vessels of two and three hundred tons may run up over the bar into the harbour: but at low water there are only 10 feet over it. The channel, within, winds with the southern shore, and the settlements of Liverpool upwards.

The entrance bears W. by S. 17½ leagues from Sambro' lighthouse,† and W.S.W. ½ W. 16 miles from Cape le Have. Coffin's Island, which lies without it, is distinguished by the lighthouse already noticed, on page 17, and which exhibits a light revolving every two minutes. The land in the vicinity of the harbour is generally rocky and barren, yet the commercial spirit of the people has raised the town to respectability and opulence, and they trade to every part of the West-Indies. The lumber trade and fishery are flourishing, and the population exceeds 4340 persons.

In Port Medway and Liverpool Bay, it is high water, on the full and change, at fifty minutes past seven, and the vertical rise is from 5 to 8 feet.

PORT MOUTON, or Matoon, *(Gambier Harbour* of *Des Barres,)* is formed by an island of the same name, which lies at the entrance, and, therefore, forms two channels. Of the latter, that on the western side of the island is so impeded by islets and shoals, as to leave a small passage only for small vessels, and that close to the main. At a mile from the island, on the east, is a ridge called the *Brasil Rocks;* and, from the N.W. end of the island, a shoal extends to the distance of more than a mile. Within Matoon Island, on the W.N.W., are two islands, called the Spectacles, or Saddle. M. des Barres says, "On both sides of the Portsmouth [*Brasil*] Rocks, which are always above water, you have deep channels, and of a sufficient width for ships to turn into the harbour." With a leading wind you may steer up N.N.W. ¾ W., until you bring the Saddle to bear S.W. ¼ W., and haul up S.W. by W. to the anchoring-ground, where there will be found from 20 to 12 fathoms, muddy bottom, in security from all winds.

At five miles S.S.W. ¼ W. from the south end of Mouton Island lies an islet, surrounded by a shoal, and named Little Hope Island. It is only 21 feet high, and 200 fathoms in length, at 2¼ miles from the shore. A valuable ship was lost here, in 1815; and Mr. Lockwood has recommended the erection of an obelisk, or beacon, upon the isle, which would be of great advantage to the coasters, and to all who approach the coast.

PORT JOLIE.—The next harbour, west of Little Hope Isle, is Port Jolie, (*Stormont River* of Des Barres, and *Little Port Jolly* of others,) which extends five miles inland, but is altogether very shoal, and has scarcely sufficient water for large boats. The lands here are stony and barren, but eleven families are maintained by fishing. Between this harbour and Hope Isle are several ledges, which show themselves, and there is a shoal spot nearly mid-way between the isle and the main.

PORT HEBERT, or Great Port Jolie, (*Port Mansfield* of Des Barres,) may be distinguished by the steep head on the west. Its eastern point, *Point Hebert*, lies in latitude 43° 51′ 10″, and longitude 64° 51′ 20″. At half a league to the S.W., without the entrance, is an islet, called Green Island, which is remarkable, and destitute of wood. The only anchorage here, for large vessels, is in the mouth of the harbour.

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* Western Head is the *Bald Point* of M. Des Barres.

† Mr. Lockwood says 25 leagues from Cape Sambro', but this is clearly a mistake.

Above are flats, with narrow winding channels through the mud. Fifteen families are settled in the port.

SABLE RIVER (*Penton River* of Des Barres) is impeded by a bar which admits no vessels larger than small fishers. The country is sterile, but eleven families are settled here. A reef lies opposite to the middle of the entrance.

RUGGED ISLAND HARBOUR (*Port Mills* of Des Barres) takes its name from its rugged appearance, and the numerous sunken rocks and ledges about it. This place is seldom resorted to, unless by the fishermen, although within the anchorage is good, in 4½ and 4 fathoms. In a gale of wind, the uneven rocky ground at the entrance causes the sea to break from side to side. At a mile from the western head is a bed of rocks, named the *Gull*, over which the sea always breaks.

Thomas' or *Rugged Island*, to the east of the harbour, affords a good mark for it; this island having high rocky cliffs on its eastern side. From its southern point sunken rocks extend to the S.W. nearly a mile, and within these is the Tiger, a rock of only 4½ feet, lying south, half a mile from Rug Point, the eastern point of the harbour. Having cleared these on the outside, haul up N.N.W. for the islands on the left or western side, and so as to avoid a shoal which stretches half-way over from the opposite side. Pursuing this direction, you may proceed to the anchorage in the north arm of the harbour.

SHELBURNE HARBOUR, or PORT ROSEWAY.—Cape Roseway, the S.E. point of Roseneath or Macnutt's Island, is a high cliff of white rocks, the top of which is partly without wood. The west side of the island is low. On the cape stands the noble light-house of Shelburne, which has a white and remarkable appearance in the day, and at night exhibits a small light below the upper one, by which it is distinguished, at night, from the light of Sambro', or Halifax. The upper light is about 150 feet above the level of the sea, and the smaller light is 36 feet below the lantern.

The latitude of this lighthouse, according to Mr. Backhouse, in 1792, by the several means of double and meridian altitudes, is 43° 42′ 30″. The variation at the same time was 13° 30′ W. Of preceding observations, the results were, latitude 43° 40½′, and longitude 65° 12½′.

This harbour is, altogether, the best in Nova-Scotia, but its town has long been in a state of decline, and some of its streets are overgrown with grass and weeds. In 1784 its population exceeded 12,000; in 1816, it had diminished to 374 persons; but, in 1828, it had 2697.

The directions for this harbour, as given by Mr. Backhouse, are as follow. *(See his Chart.)*

When coming in from the ocean, after you have made the lighthouse, bring it to bear N.W., or N.W. by N., and steer directly for it. The dangers that lie on the east side, going in, are the Rugged Island Rocks, a long ledge that stretches out from the shore 6 or 7 miles, the Bell Rock, and the Straptub Rock. On the west side is the Jig Rock. The Bell Rock is always visible and bold-to.

When you have gotten abreast of the lighthouse, steer up in mid-channel. Roseneath Island is pretty bold-to all the way from the lighthouse to the N.W. end of the island. When you come up half-way between George's Point and Sandy Point, be careful of a sunken rock that runs off from that bight, on which are only 3 fathoms at low water; keep the west shore on board to avoid it: your depth of water will be from 4, 5, to 6, fathoms.

SANDY POINT is pretty steep-to: run above this point about half a mile, and come to anchor in 6 fathoms, muddy bottom; if you choose you may sail up to the upper part of the harbour, and come to anchor in 5 fathoms, muddy bottom, about one mile and a half from the town, below the harbour flat. This harbour would contain all his Majesty's ships of the third-rate.

In sailing in from the eastward, be careful to avoid the Rugged Island Rocks, which are under water; do not haul up for the harbour till the lighthouse bears from you W. by N. ½ N.; by that mean you will avoid every danger, and may proceed as taught above.

In sailing into Shelburne from the westward, do not haul up for the lighthouse till it bears from you N.W. by W. ½ W.: you will thus avoid the *Jig Rock*, on the west, which lies within one mile and a quarter S. ½ W. from the lighthouse, and is pretty steep-to.

Should

Should the wind take you a-head, and constrain you to ply to the windward up the harbour, do not make too bold with the eastern shore; for, half-way between George's Point and Sandy Point, is a reef of sunken rocks. When you come abreast of them, you need not stand above half-channel over to avoid them: the Hussar frigate, in plying to windward down the harbour, had nearly touched on them. On the west shore, abreast of Sandy Point, it is flat, therefore do not make too bold in standing over.

The ledge of rocks that his Majesty's ship Adamant struck upon, which lies abreast of Durfey's House, is to be carefully avoided: do not stand any farther over to the westward than 4½ fathoms, lest you come bounce upon the rock, as the Adamant did, and lay a whole tide before she floated, and that not without lightening the ship. The east shore has regular soundings, from Sandy Point upwards, from 3 to 4, and 5 to 6, fathoms, to the upper part of the harbour, where you may ride safely in 5 fathoms, good holding ground. Your course up from the lighthouse in a fair-way, is from N.W. to N.W. by N.; and when you round Sandy Point, the course is thence N. by W. and North, as you have the wind. The entrance of Shelburne Harbour affords a refuge to ships with the wind off-shore, (which the entrance of Halifax does not,) and there is anchoring ground at the mouth of the harbour, when it blows too strong to ply to windward.

In sailing from the westward for Shelburne, at night, you must not haul up for the harbour until the light bears N. by E. ½ E., in order to avoid the Jig Rock; and, when sailing in, *from the eastward,* you must not haul up for the harbour till the light bears W. by N. ½ N., in order to avoid the ledges that lie off the Rugged Islands, and bear from the lighthouse E. ½ S. eight miles distant. You may stop a tide in the entrance of the harbour, in from 16 to 10 fathoms, sand, and some parts clay, bottom.

Shelburne is a safe harbour against any wind, except a violent storm from the S.S.W. At the town, the wind from S. by E. does no harm; although, from S. by W. to S.W. by S., if blowing hard for any considerable time, it is apt to set the small vessels adrift at the wharfs; but, in the stream, with good cables and anchors, no winds can injure.

It has been observed, in '*The American Coast Pilot,*' that "Shelburne affords an excellent shelter to vessels in distress, of any kind, as a small supply of cordage and duck can, at almost any time, be had. Carpenters can be procured for repairing; pump, block, and sail, makers, also. It affords plenty of spars, and, generally, of provisions. Water is easily obtained, and of excellent quality. The port-charges for a vessel which puts in for supplies only, is four-pence per ton, light money, on foreign bottoms. If a vessel enters at the custom-house, the charges are high: but that is seldom requisite."

NEGRO HARBOUR (*Port Amherst* of Des Barres) takes its name from Cape Negro, on the island which lies before it, in latitude 43° 32′ 5″, and longitude 65° 17′ 50″. The island is very low about the middle, and appears like two islands. The cape itself is remarkably high, dark, rocky, and barren, and bears S.W. ½ S. eight miles* from Cape Roseway, or Shelburne lighthouse. The best channel in is on the eastern side of the island; but even this is impeded by two ledges, called the *Gray Rocks* and *Budget;* the latter a blind rock, of only six feet, at a quarter of a mile from the island, on both sides of which there is deep water. The Gray Rocks lie at a quarter of a mile to the north-eastward of the Budget, and serve as a mark for the harbour.

In the passage on the eastern side of the Budget the depths are from 14 to 10 fathoms. With Shelburne light shut in, you will be within the rocks. There is excellent anchorage on the N.E. of Negro Island, in from 6 to 4 fathoms, bottom of stiff mud. The northern part of the island presents a low shingly beach, and from this a bar extends over to the eastern side of the harbour, on a part of which are only 15 feet of water. The river above is navigable to the distance of six miles, having from 5 to 3 fathoms, bottom of clay.

The inhabitants of the harbour, in 1817, amounted to 463 persons, who subsist by farming and fishing. They now exceed 500.

The passage on the western side of Negro Island is very intricate, having numerous rocks, &c.; yet, as these may be seen, it may be attempted, under cautious decision, by a stranger, in case of distress.†

PORT

* Not *fifteen* miles, as stated by Mr. Lockwood.

† The rocks in the vicinity of Cape Negro are not the only evils to be dreaded here. In the month of December, 1818, the Mary, brig, of Cumberland, New Brunswick, on her way to Passamaquoddy,

PORT LATOUR (*Port Haldimand* of Des Barres) is separated from Negro Harbour, by a narrow peninsula. The extreme points of the entrance are Jeffery Point on the east, and Baccaro Point on the west. Between and within these are several clusters of rock, which render the harbour fit for small craft only.

Baccaro Point, at the entrance of this port, on the west side, lies in latitude 43° 31′, and longitude 65° 24′; the *Vulture*, a dangerous breaker, lies S.W. by W. half a league from the point. The *Bantam Rock*, also half a league S. by W. ½ W. from the point, has only 4 feet over it, at low water.

BARRINGTON BAY.—With the exception of the rocks off Point Baccaro, the Bay of Barrington is clear, but there are extensive flats towards the head of it, and the channel upwards narrows so much, that it requires a leading wind to wind through it to the anchoring-ground, where the depths are from 26 to 18 feet. The town of Barrington, seated at the head of the harbour, with its environs, contained, in 1817, a population of 987 persons, happily situated. The lands are stony, but afford excellent pasturage, and cattle are, consequently, abundant here.

During a S.W. gale, there is good shelter on the N.E. side of Sable Island, in 5 and 4 fathoms, sandy bottom.

The Western Passage, or that on the N.W. side of Sable Island, is intricate, and therefore used by small vessels only: it is not safe without a commanding breeze, as the tide sets immediately upon the rocks, which lie scattered within it, and the ebb is forced through to the eastward, by the bay tide on the west, at the rate of from 3 to 5 knots. This passage is, however, much used by the coasters.

Sable Island is under tillage, and had forty-seven families on it, comfortably situated, in 1817. Cape Sable is the cliff of a sandy islet, distinct from the former; it is white, broken, evidently diminishing, and may be seen at the distance of 5 leagues. From this islet ledges extend outward, both to the east and west; the eastern ledge, called the *Horse-shoe*, extends 2½ miles S.E. by S.: the western, or *Cape Ledge*, extends three miles to the S.W. The tide, both ebb and flood, sets directly across these ledges, the flood westward. The ebb, setting with rapidity to the N.E., causes a strong break to a considerable distance from shore. The position of the southern point of Cape Sable, according to M. des Barres, is latitude 43° 26′ 0″, and longitude 65° 34′ 30″. Of the stream, &c. M. des Barres says, "Here the tide runs at the rate of three, and sometimes four, knots; and, when the wind blows fresh, a rippling extends from the breakers southerly, to the distance of nearly three leagues, and shifts its direction with the tide; with the flood it is more westerly, and inclines to the eastward with the ebb. This ripple may be dangerous to pass through in a gale, as it has all the appearance of high breakers, although there is no less than 8, 10, 12, and 20, fathoms of water, rocky ground. At the cape, the tide, on full and change days, flows at VIII h., and rises 9 feet."

BRASIL ROCK.—This rock has been variously described, but we have no doubt that the following is correct. It is a flat rock, covering an area of about ten yards, and having 8 feet over it, at low water, in calm weather; within a hundred yards from its base, are from 6 to 8 fathoms of water: to the southward, at about a mile from the rock, the depths are from 30 to 35 fathoms: but, towards the shore, the soundings are regular, 15 and 19 to 20 and 24 fathoms, sandy bottom. The tide, by running strongly over the shoal ground, causes a great ripple, and makes the rock appear larger than it really is. From Cape Negro the bearing and distance to the rock are *S.S.W. true*, or, S.W. ¾ S.

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maquoddy, struck on the Half-moon Rocks, near Cape Negro. The vessel filled with water, and ten of the passengers perished in less than ten minutes. Seventeen got into the boat; but, it being dark, and the sea running high, the boat was not manageable, and struck on a rock, near the larger one called *Blanche Islet*, which was covered with snow. Here, a lady, Mrs. Soden, and her seven children, with other persons, were drowned. During this time the inhabitants of Port Latour were plundering the wreck of such clothes and baggage, belonging to the sufferers, as had escaped the seas. The vessel was sold by public auction, and bought by some inhabitants, on condition that the properties of the passengers should be given up to them, including what had been stolen from the vessel; an agreement which was evaded. Search-warrants were granted, but ineffectually, as the accused were apprised of the intended visit, by some officers of justice, who were sharers in the spoil.

After some weeks spent in this way, the surviving passengers were obliged to leave all with the robbers, some of whom are of high standing in Port Latour and Barrington.

(See, farther, "Observer," Newspaper, of Nov. 7, 1819.)

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by compass, 10 miles; and, from the rock, Cape Sable bears *W. by N. ½ N. true*, or N.W. by W. ¼ W. by compass, 8½ miles. Its position, according to M. des Barres, is latitude 43° 24′ 15″, longitude 65° 22′.

But it appears probable, as shown in the *Note* on *Cape Sable Seal Island*, &c. attached to the preceding table, that this coast, with its isles, may be laid down in the charts several miles too far north: the doubt can be solved only by future and repeated observations. In the interim caution is required.

III.—CAPE SABLE *to the* BAY *of* FUNDY *and* CHIGNECTO BAY, *including* ST. JOHN'S, GRAND MANAN, *and* PASSAMAQUODDY BAY.

GENERAL CAUTIONS.—An inspection of the Chart of the S.W. coast of Nova Scotia, and a consideration of the relative situation of that coast, as exposed to the ocean, with the consequent and variable set of the tides about it, as well as about the Island Manan, &c., will naturally lead the mariner to consider that its navigation, involving extraordinary difficulties, requires extraordinary attention. Previous events, the great number of ships lost hereabout, even *within a few years*, will justify the supposition. It is, indeed, a coast beset with peril; but the peril may be avoided, in a great degree, by the exercise of skill and prudence. To the want of both is to be attributed many of the losses which have occurred here.

In touching on this subject, Mr. Lockwood says that, the necessity of frequently sounding with the deep-sea lead, and the expediency of having anchors and cables ready for immediate use, cannot be too often urged, nor too often repeated. Vessels, well *equipped and perfect in gear*, with anchors stowed, as in the middle of the Atlantic Ocean, have been wrecked in moderate weather, and so frequently, that such gross idleness cannot be too much reprobated; and, we may add, too *fully exposed*.*

TIDES.—As the TIDES are most particularly to be attended to, we shall attempt a description of them in the first instance, before we proceed to that of the coast, and the consequent sailing directions.

The TIDE about CAPE SABLE has been explained in the preceding section. From Cape Sable toward the Seal, Mud, and Tusket, Isles, the flood sets to the northwestward, at the rate of from two to three miles in an hour: in the channels of these islets its rate increases to four or five miles. At the Seal and Mud Islands the ebb runs E. by S., S.E., and South; varying, however, with the figure of the lands and the direction of the wind.

From the Tusket-bald Isles the tide flows to the northward, taking the direction of the shore, past Cape St. Mary; thence N.N.W. towards Brier's Island. The flood, therefore, sets but slowly up St. Mary's Bay, yet with increasing strength up the Bay of Fundy; still greater, as the bay narrows upward; so that the Basin of Mines and Chig-

* *Instances.*—A valuable coppered ship, with light airs of wind, drifted on the rocks, although the fishing-lines were in use at the time; the breakers heard, and the depth known. In the last extremity, a kedge-anchor was let go. The ship bilged, and the passengers were landed.

On a point, from which soundings gradually deepen to nearly 40 miles, a large coppered ship ran; and, having landed her passengers, was sold, as usual, for the *benefit of the underwriters*.

These are but two out of many. Some appear almost incredible; but the authority places the facts beyond doubt.

COBBETT'S STORM in the BAY of FUNDY.—The following is not unworthy of a seaman's notice. "When I was about eighteen, I was on board a little sloop, in the Bay of Fundy. A terrible storm arose at nightfall; my comrades, all but four or five of us, who were to assist the sailors, were shut down below; the wind dashed the vessel about, and tossed it like a cork; the thunder was tremendous; the night was dark as pitch, except when the lightning came to show us the horrid rocks and breakers, with which we were surrounded. In the midst of this scene, with his boom carried away, his mast snapt off at the top, and half his tackle torn to ribbons, the captain, an American, whose name was Whitmore, stood upon the deck, calling out, every now and then, in a loud and cheerful voice, '*Steady she goes, my boys!*' This took from us, who were ignorant young soldiers, all idea of danger to our lives, and made us able to obey his orders: but, when the storm was over, the next morning, and we had happily escaped, he smiled, and told us that he had expected every moment to go to the bottom. We are now not in such peril. The storm has abated in its fury: but '*steady*' is still the word!"

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necto Bay are filled with vast rapidity, and here the water sometimes rises to the extraordinary height of 75 feet. These tides are, however, regular; and, although the wind, in an opposite direction, changes the direction of the rippling, and sometimes makes it dangerous, it has little or no effect on their general courses.

The DANGERS about GRAND MANAN have been distinguished by wrecks as much as the S.W. coasts of Nova-Scotia; and the best passage is, therefore, on the west of that island. Here the tides course regularly and strongly; but, among the rocks and ledges on the S.E., they are devious, embarrassing, and run with greater rapidity. At the Bay of Passamaquoddy, from the S.E. land to the White Islands, the flood strikes across with great strength; and, in light winds, must be particularly guarded against.

The TIDE of ST. JOHN'S HARBOUR, New Brunswick, will be noticed hereafter, as will that of Annapolis. Through the Gut of the latter it rushes with great force and rapidity.

Strangers bound up the Bay of Fundy, to St. John's or Annapolis, should have a pilot, as the tides in this bay are very rapid, and there is no anchoring-ground until you reach the Bay of Passamaquoddy, or Meogenes Bay. In the Bay the weather is frequently very foggy, and the S.E. gales blow with great violence for twelve or fourteen hours, then shift to the N.W., and as suddenly blow as violently from the opposite quarter.*

"*The spring-tides in the Bay of Fundy* rise to 30 feet perpendicular, and neap-tides rise from 20 to 22 feet; they flow, on full and change, at St. John's, Meogenes Bay, Annapolis, Harbour Delute, L'Etang, and Grand Manan Island, at 12 o'clock. The tide sets nearly along shore."

"*In Chignecto Bay* the tide flows with great rapidity, as before mentioned, and at the equinoxes rises from 60 to 70 feet perpendicular. By means of these high tides, the Basin of Mines, and several fine rivers, which discharge themselves about the head of the Bay of Fundy, are rendered navigable. It is worthy of remark, that, at the same time, the Gulf of St. Lawrence tide, in *Bay Verte*, on the N.E. side of the isthmus, rises only 8 feet."

The COASTS, ISLANDS, &c.—The southernmost point of SEAL ISLAND, which bears from that of the ledge of Cape Sable nearly W.N.W. 5 leagues, lies in or about latitude 43° 24′, and longitude 65° 59′. This island is more than two miles in length, North and South. The southern part, covered with scrubby trees, is elevated 30 feet above the sea. A dangerous reef extends to one mile South, from the south end of the island.

SEAL ISLAND LIGHT.—Since the 1st of November, 1831, a new lighthouse on the S.W. part of the island has exhibited a conspicuous *fixed light*, which may be seen, on approaching, from every point of the compass.

At 3½ miles S. by W. from the south end of Seal Island, lies the *Blonde*, a rock, uncovered at low water, on which the frigate of that name was lost, in 1777. Close around it are from 7 to 10 fathoms. Within a mile westward from the Blonde are heavy and dangerous overfalls, which present an alarming aspect. At 4½ miles North from these is a bed of shoal ground, of 16 feet, causing a violent ripple.

Off the west side of Seal Island is the rocky islet called the *Devil's Limb*, which may at all times be seen.

MUD ISLES, sometimes called the NORTH SEALS, consist of five low rugged islands. The southernmost is situate at 2½ miles from the N.E. part of Seal Island. Between is a passage fit for any ship, but there are overfalls of 18 feet at the distance of a short mile from the southern Mud Island. In the channel are from 10 to 15 fathoms. This channel lies with Cape Sable, bearing S.E. by E. ¾ E. [*E.* ¾ *S.*] distant 5 leagues.

Wild fowl, as well as fish, abound here; and, on one of the isles, vast quantities of petrels, or Mother Cary's chicken, annually breed. They burrow under ground diagonally, 3 or 4 feet deep, where they set on one egg, and may be seen flitting about the ground in astonishing numbers, searching for food.

The course and distance to pass from Cape Sable to between the Seal and Mud Islands

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* This was said by M. Des Barres; but see, farther, the *General Directions*, &c. hereafter.

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are N.W. by W. ¾ W. six leagues. In this track may be found several overfalls, of from 15 to 7 fathoms, bottom of gravel, which break violently in spring-tides. The north end of Seal Island is bold-to one cable's length, 10 to 7 fathoms. The opposite side has a shoal bank, on which a ship of war struck in 1796.

The TUSKET ISLES, or TUSKETS, is the group or cluster lying to the northward of the Mud Isles, and to the S.W. of the entrance of Tusket River. Some of them are of considerable size, and there are many shoals and ledges among them. On the west of these isles are GREEN ISLAND and the GANNET ROCK; the latter, whitened with bird's dung, and 36 feet above the sea at high water, is represented by M. des Barres as in latitude 43° 40′ 40″, and longitude 66° 9′.* At about half a league from it, on the S.W., is a ledge that appears a half ebb, and on which the Opossum, brig, struck in 1816. Other vessels have been injured by this danger, which has been heretofore represented to lie at *four* miles W. by N. from the Gannet.

At half a mile to the N.W. of the north-western Mud Isle is a dangerous ledge, bare at half-ebb, called the *Soldiers*, which is more than half a mile in length from N.N.E. to S.S.W. At a mile and a quarter N. ¼ W. from this is another, the *Actæon*, which thence extends N. by W. two-thirds of a mile. Half a mile farther, in the same direction, is a shoal, of similar size, having over its centre a depth of only 2 fathoms. The navigation hereabout is, therefore, to be avoided by strangers.

PUBNICO.—This harbour, little known, is a very good one; it is easy of access, and conveniently situated for vessels bound to the Bay of Fundy, which, in distress, may here find supplies as well as shelter. From the south end of Seal Island Reef, already described, to the entrance of Pubnico, the bearing and distance are N.E. ¼ E. 15 miles. The depths between vary from 20 to 16 fathoms, and thence to 12 and 6 fathoms, up to the beach, the proper anchorage for a stranger. On the western side, above the beach, is a ledge, partly dry at low water. The total population of Pubnico, in 1817, was 285 persons, children included.

On sailing towards Pubnico, you pass on the west of *John's Island*, which lies 2½ miles to the southward of the harbour, and the north side of which affords good shelter during a S.E. gale. Small vessels lie along the beach forming the eastern part of this island.

From the entrance of Pubnico, a course W. by N., 4 leagues, leads clear to the southward of the Tusket Isles. On this course you will pass at a mile to the southward of the southernmost Tusket, or Bald Isle. A course W. ¼ S., 12 miles, will lead between, and clear of the Actæon and Soldier's ledges, whence you may proceed either to the N.W. or S.W. according to your destination.

CAPE FOURCHU, or the FORKED CAPE, which lies in about latitude 43° 50′, longitude 66° 10′, is very remarkable, being rocky, barren, and high. Within this cape is the harbour of YARMOUTH, which is small, but safe. Off the entrance, at 2¼ miles S.S.W. ¾ W., lies the *Bagshot*, a blind rock, which is dry at low water, and runs shoal one quarter of a mile to the southward. In sailing into the harbour, you may pass on either side of it. There are other rocks in the entrance, and the fair-way in is on the eastern shore, till opposite the point or isthmus on that side. At the top of the latter stands the battery; and under its lee, or to the northward, is the anchorage, with good ground, in 6 or 5 fathoms.

Above the anchorage is the town of Yarmouth, a respectable one, which contained, with its environs, 4345 persons in 1828.

At a league and a half S. by E. from Cape Fourchu is Point Jegogan (*Cape Jebogue* of Des Barres); the land between is low. Within the point is the little harbour of JEBOGUE, which is shoal, and frequented only by the coasters. There are several shoals in the vicinity. The lands hereabout are good, of moderate height, and well settled.

From Cape Fourchu to CAPE ST. MARY, the bearing and distance are N. ¾ E. 6 leagues: and from Cape St. Mary to the S.W. end of Bryer's Island, N.N.W. ¼ W. 12½ miles.

With Cape Fourchu bearing S.E. by E. ½ E. 13 miles distant, lies the LURCHER, a sunken ledge, of 12 feet at low water, covering an area of about three acres. From the

* The new chart exhibits it in 43° 41′ 50″ N. It may probably lie in 43° 38′.

Gannet

Gannet Rock to this ledge, the bearing and distance are N.N.W. ¾ W. 19 miles; and, from the Lurcher to Cape St. Mary, N.E. ½ E. 18 miles.

The TRINITY LEDGE, another reef, lies S.W. ¾ W. 6 miles from Cape St. Mary, and N. by W. 14 miles from Cape Fourchu. This danger covers a space of more than half an acre, and three small rocks upon it are seen at low tides. The stream sets rapidly over it. The depth, to a mile around, is from 12 to 15 fathoms.

BRYER'S ISLAND, above mentioned, is an island only 3½ miles in extent from N.E. to S.W., on the western side of the entrance of St. Mary's Bay. It contained, in 1816, 147 persons. On its S.W. side is a lighthouse, the light of which is about 92 feet above the level of the sea. A rocky spit extends two miles S.W. from the S.E. point of the island, and has a rock near its extremity, called the *Black Rock*. At a mile farther, in the same direction, is a small shoal of 3 fathoms.*

A NEW LIGHTHOUSE, lantern, and lamps, have been lately completed on the site of the old lighthouse on Brier's Island. "The complaints against the bad keeping of the old light were universal, and when the old lighthouse came to be taken down, it was then discovered that eight large posts, which supported the roof, passing up by the lantern, had intercepted the light about 25 per cent.; and, by acting as so many screens, made the light appear, as a vessel altered her position, like a bad or blinking light."†

LONG ISLAND.—The next island to Bryer's, forming the west side of St. Mary's Bay, is LONG ISLAND; it is 10 miles long from N.E. to S.W., and half a league in breadth. It is inhabited, and its inhabitants, in 1816, amounted to 135 persons. Long Island is divided from Bryer's Island, on the S.W., by a strait, called *Grand Passage*, and on the N.E. from the Peninsula of St. Mary, by another, called *Petit Passage*. In the Grand Passage the water is deep, but the channel crooked, and it should not be attempted by a stranger, unless under very favourable circumstances. The Petit Passage is about 280 fathoms wide in its narrowest part, and has from 20 to 30 fathoms of water: its shores are bold-to. On its western side, near the northern entrance, lies *Eddy Cove*, a convenient place for vessels to anchor in, out of the stream of the tide, which runs so rapidly, that, without a fresh leading wind, no ship can stem it. The south end of Grand Passage is 11½ miles N. by W. from Cape St. Mary. That of the Petit Passage is three leagues to the north-east from Grand Passage.

BAY of ST. MARY.—From Cape St. Mary, upwards, into this bay, the south shore is low, and runs out in sandy flats. The north shore presents high steep cliffs, with deep water close under them. Mid-channel, and above two-thirds up the bay, lies a rocky bank, with 4 and 4½ fathoms of water, and on each side of which are channels of 12 and 15 fathoms, muddy bottom. The entrance of the River Sissibou, on the south side of the bay, is shoal, and within has a narrow channel of 2 fathoms of water. Opposite to Sissibou lies the Sandy Cove, where small vessels, when it blows hard, may ground safely on mud, and be sheltered from all winds.

BAY of FUNDY CONTINUED.—We now proceed with the particular description of the Coasts of the Bay of Fundy, commencing with Bryer's Island, the lighthouse on which has been described.

Off the N.W. side of Bryer's Island are several dangers, which must be cautiously avoided. Of these, the outer are called the *Northwest Ledge*, and *Betson's Ledge*: both lie at the distance of 2½ miles to the north-westward of the island, and between

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* On Bryer's Island the ship Trafalgar, of Hull, was lost, 25th July, 1817, at about half-past eight in the evening. The ship, bound for St. John's, had been running up all the day; the weather being thick, could not see any thing: "At seven *p. m.* hove the ship to, with her head to the westward, thinking we were well over to the westward, sounding in 40 fathoms; the tide ran with great strength; and, before we could see the land, we heard the surf against the rocks; got sail upon the ship; but, being so close, the strong tide set us upon the rocks. It being high water when we got on, run out a kedge to heave her off, but all to no purpose. At low water the ship was dry all round, amongst the rugged rocks, which went through her in different parts; the ship having as much water within as there was on the outside at high water." The passengers were safely landed, and a part of the stores saved, which were taken to St. John's to be sold, there being no purchasers on the island.

† We are indebted for this and much other valuable information to *Mr. Wm. Reynolds*, Chart and Bookseller, of St. John's, New Brunswick, whose laudable zeal for the diffusion of such knowledge is entitled to the most respectful acknowledgment. By this gentleman we have been informed that "All the lighthouses in the Bay of Fundy have the best constructed iron lanterns, with copper lamps, and the improved reflectors: consequently are fully to be depended on."

them

them and the shore are two other ledges, with deep channels between them; but the situations of the latter are not exactly known. The N.W. Ledge is 4 miles N. ¼ E. from the lighthouse. Its shoal part is of the extent of an acre of ground, and the whole extent of the shoal about three-quarters of a mile.

In the parallel of 44° 19′, at 8 miles westward of Bryer's Island, strong ripples of tide may be found, which may easily be mistaken for shoals and breakers; though the soundings here vary from 45 to 33, and again to 45 fathoms. At 2½ miles more to the south are 56 fathoms; and at two miles from Bryer's Island are 40 fathoms. At 5 miles to the north-westward of this Island no bottom is to be found with a line of 90 fathoms.

The coast from the south part of Long Island to the Gut of Annapolis, is nearly straight, and trends N.E. by E. 11 leagues. The shore is bound with high rocky cliffs, above which is a range of hills, that rise to a considerable height; their tops appear smooth and unbroken, except near the Grand Passage, Petit Passage, Sandy Cove, and Gulliver's Hole, where those hills sink in valleys.

ANNAPOLIS.—According to M. des Barres, the Gut of Annapolis lies in latitude 44° 45′ 30″, and longitude 65° 46′ 30″.* The shore, on both sides, without the Gut, is iron-bound for several leagues. From Petit Passage, there is a range of hills rising gradually to a considerable height, to the entrance of the gut, where it terminates by a steep fall. Here you have from 25 to 30 and 40 fathoms of water, which, as you draw into the basin, shoalens quickly to 10, 8, and 6, fathoms, muddy bottom. The stream of ebb and flood sets through the gut at the rate of five knots, and causes several whirlpools and eddies. The truest tide is on the eastern shore, which is so bold-to, that a ship might rub her bowsprit against the cliffs, and be in 10 fathoms of water. Point Prim, on the western side of the entrance, runs off shoal about 30 fathoms. Ships may anchor on the eastern side of the basin, or run up eastward, 4 miles, towards Goat Island; observing, when within the distance of a mile and a half from it, to stretch two-thirds of the way over to the north shore, until past the island, which is shoal all round; and thence to keep mid-channel up to the town: the depths, 4 and 5 fathoms.

There is a lighthouse on Point Prim, the light of which is exhibited from a window, at 120 feet above the sea. Caution is requisite on approaching the gut, as Gulliver's Hole, 2½ leagues to the westward, presents nearly similar features, and a mistake might be dangerous. The light-tower is, however, a sufficient distinction, if attended to.

There is no difficulty in going through Annapolis Gut, if you have a commanding breeze, although the tide is very rapid, and the eddies strong. At about one-third through lies *Man of War Rock;* about a cable's length from the shore: by keeping in mid-channel you will clear it.

Of Annapolis, Mr. Lockwood says, "The abrupt precipices of the high lands form the gut, and cause flurries of wind that course in all directions, and rush violently from the summits of the hills. The tide hurries through the Gut with great force. There is not anchorage, except very close in-shore, near the outer western point. In some places the depth is 40 to 80 fathoms. In entering Annapolis Basin, the scenery is inexpressibly beautiful. The farms are becoming valuable and extensive. The herring-fishery is a source of great profit; the fish are so well cured, that the merchants of Halifax and St. John's give them a decided preference for foreign markets." Between this and St. John's a weekly packet is established, as noticed hereafter.

ANNAPOLIS to the BASIN of MINES.—From the Gut of Annapolis up the bay to Cape Split, the coast continues straight, and nearly in the same direction, with a few rocky cliffs near the gut, and many banks of red earth under high lands, which appear very even. In the gut, leading into the Basin of Mines, from Cape Split to Cape Blowmedown, and from Cape D'Or, on the north side, to Partridge Island, the land rises almost perpendicular from the shore, to a very great height. Between Cape Blowmedown and Partridge Island, there is a great depth of water; and the stream of the current, even at the time of neap-tides, does not run less than at the rate of 5 or 6 fathoms.

Cape D'Or and Cape Chignecto are high lands, with very steep cliffs of rocks and red earth, and deep water close under them. You have nearly the same kind of shore to the head of Chignecto Bay, where very extensive flats of mud and quick-sand are left dry at low-water. The tides come in a *bore,* and rush in with great rapidity; *they are known to flow, at the equinoxes, from* 60 *to* 75 *feet perpendicular.*

* The entrance, according to the late Admiralty chart, is in 44° 44′. N.

The Isle Haute is remarkable for the great height and steepness of the rocky cliffs, which seem to overhang on the west side. There is a good landing-place at its eastern end, and anchorage at half a mile off, in 18 fathoms, with the low point about N.E. by N., where, also, is a stream of water running into the sea. The east end of this isle bears from Cape Chignecto S.W. ½ S., 4 miles, and from Cape D'Or W. ½ N. 9 miles.

BASIN of MINES.—There are whirlpools off Cape Split, which are dangerous with spring-tides, and run at about 9 knots. Having passed this place, you may come to an anchor in a bay of the north shore, between Partridge Isle, to the east, and Cape Sharp, on the west. From this spot, if bound to WINDSOR RIVER, it will be necessary to get under way two hours before low water, in order to get into the stream of the Windsor tide on the southern shore; otherwise, unless with a commanding breeze, a vessel is likely to be carried up with the Cobequid or Eastern tide, which is the main stream, and runs very strongly, both ebb and flood. The Windsor tide turns off round Cape Blowmedown, down to the southward, and then again is divided; one part continuing its course up to Windsor, and the other forms the Cornwallis tide, running up the river of that name.

In running into Windsor River, a house on *Horton Bluff* (within the river on the west) should be kept in a south bearing, and the gap in the land formed by *Parsborough River*, North; this will take you through the channel between the Flats, which cannot be passed at low water, by a vessel drawing 15 feet, much before half-tide. Off Horton Bluff the ground is loose and slaty, and a ship will be likely to drag her anchors with a strong breeze, particularly at full and change: perhaps it may be best for men of war to moor across the stream, and full one-third from the bluff.

The Banks and Flats appear to be composed of soft crumbling sand-stone, which is washed down from the surrounding country in great quantities during the spring; and, by accumulating on them, are constantly increasing their height.

It is *High Water*, on the full and change, at Cape Chignecto and Cape D'Or at XI h., and spring-tides, in general, rise from 30 to 40 feet. Off Cape Split, at XI½ h. rise, 40 feet: South side of the Basin of Mines, XI½ h.: rise, 38 feet.

The Basin of Mines and Chignecto Bay are now surrounded with valuable settlements, and abound in coal, plaster, limestone, and other minerals.

NORTH COAST OF THE BAY OF FUNDY, commencing Eastward.—The township of St. Martin's, on the north shore, to the N.W. by N. of Cape Chignecto, is thinly inhabited; the land in the neighbourhood is moderately good, but is much broken, with steep declivities, &c. The weather here is commonly humid, the wind changeable and blustering, with limited and short intervals of sun-shine.

From Quako, at about 16 miles westward of St. Martin's, to the harbour of St. John's, the land, as already described, is high: the interior hills rise in easy inequalities; but the ravines of the cliffs appear deep and gloomy: the indents have beaches; and Black River, at 5 leagues west of Quako, although dry from half-tide, is a safe inlet for a small vessel.

At 11 miles S.E. from Quako, is a dangerous shoal of gravel, called the QUAKO LEDGE. It extends S.E. and N.W. about three miles, by half a mile in breadth. The widest and shoalest part is to the westward, and vessels have frequently grounded upon it. The bank shows at half-tide.

The HARBOUR of St. JOHN.—The entrance of this harbour lies N. ½ W. 10½ leagues from the entrance of Annapolis, and may be distinguished by a lighthouse on *Partridge Island*, at a mile within the exterior points, *Cape Maspeck* on the east, and *Meogenes Isle* on the west.* Partridge Island is about two miles southward from the city. It equally protects the harbour and guides the mariner to his destination.†

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* M. Des Barres gives the Cape or Point Maspeck in lat. 45° 18′ 27″, long. 65° 57′ 35″, but the late chart of 1824, edited at the Admiralty, gives the latitude as only 45° 13′; the longitude is omitted.

† The lighthouse on Partridge Island was entirely destroyed by fire in February, 1832, and a large lantern was substituted, hung on the western yard-arm of the signal-post, near the site of the lighthouse, until a new lighthouse should be completed. The fire originated in the floor of the lantern, through which a stove pipe passed.

Besides the lighthouse on Partridge Island, there is now a lighthouse erected on the Spit, within the harbour.

South-

Southward of Partridge Island, the bottom, for several miles, is muddy, and the depth gradual, from 7 to 20 fathoms, excellent for anchoring. On the bar, west of the island, the least depth is 10 feet; but, eastward of it, 16 feet. The anchoring depth, opposite to the city, is in from 22 to 7 fathoms.

The city of St. John stands on an irregular descent, with a southern aspect; and, on entering the river, presents a picturesque appearance. The river's mouth is narrow and intricate: many accidents have happened to those who have attempted the navigation without a pilot.

A breakwater has been erected at the eastern side of the entrance, below the town, for the purpose of reducing the inset of the sea into the harbour, especially during a southerly gale. Within the port, every possible facility and convenience is given to ships requiring repair: they lie upon blocks, and undergo a thorough examination, without incurring the expense, injury, and loss of time, occasioned by heaving down, so strangely persisted in at Halifax.

St. John's contains about 900 houses and 6000 inhabitants. Within the harbour is a valuable fishery, in which are annually taken from 10 to 15,000 barrels of herrings, from 2000 to 3000 barrels of salmon, and from 1000 to 2000 barrels of shad. In the most severe winter it is free from the incumbrance of ice. The country on the banks of the river abounds in excellent timber, coal, limestone, and other minerals.

The entrance into the river, two miles above the city, is over the FALLS, a narrow channel of 80 yards in breadth, and about 400 long. This passage is straight, and a ridge of rocks so extends across it as to retain the fresh water of the river. The common tides flowing here about 20 feet, at low water the waters of the river are about 12 feet higher than the water of the sea; and, at high water, the water of the sea is from 5 to 8 feet higher than the water of the river; so that, in every tide, there are two falls, one outward and one inward. The only time of passing this place is when the water of the river is level with the water of the sea, which is twice in a tide; and this opportunity of passing continues not above ten minutes; at all other times it is impassable, or extremely dangerous.

After you have entered through this place, called the *Falls*, you enter into a gullet, which is about a quarter of a mile wide, and a mile long, winding in several courses, and having about 16 fathoms in the channel. Having passed this gullet, you enter a fine large basin, about one mile and a half wide, and seven miles in length, entering into the main river of St. John.

The River of St. John has sufficient depth of water for large ships to the Falls, whence it continues navigable 60 miles up, to Fredericton, the seat of government, for vessels of 50 tons. At times of great freshes, which generally happen between the beginning of April and the middle of May, from the melting of the snow, the Falls are absolutely impassable to vessels bound up the river, as the tide does not rise to their level.

DIRECTIONS *for* ST. JOHN'S HARBOUR *and* MEOGENES BAY, *by* MR. BACKHOUSE.

"WHEN you have made Meogenes Island, or Partridge Isle,* so as to be distinguished from the lighthouse on the latter, then make a signal for a pilot, and the intelligence from Partridge Island will immediately be communicated to the city of St. John, whence a pilot will join you. Should the wind be contrary, or any other obstruction meet you, to prevent your obtaining the harbour that tide, you may sail in between the S.W. end of Meogenes Island and the main, or between the N.E. end and the main, and come to anchor in 4 or 5 fathoms at low water, mud and sandy bottom. The mark for the best anchoring-ground here, is, to bring the three hills in the country to the N.E. in a line, in a line within Rocky Point Island,† and the house on Meogenes Island to bear S.E. by S.

* These Directions should be compared with the Chart of the Harbour.

† This is an islet, lying at a cable's length from the point, and more properly called the *Shag Rock*. It is surrounded by sunken rocks.

"Shoul-

"Should the tide of ebb have taken place at the beacon, you must not (by any means) attempt to gain the harbour that tide, but wait the next half-flood, to go over the bar, as both sides of the entrance of this harbour are nothing but sharp rocks, dry at low water, and the tide of ebb is so rapid in the spring, when the ice and snow is dissolved, that all the anchors on board will not hold the ship from driving.

"*On the Nova-Scotia side of the Bay of Fundy*, your soundings will be from 50, 60, 70, 80, to 95, fathoms: stones like beans, and coarse sand; and, as you draw to the northward, the quality of the ground will alter to a fine sand, and some small shells with black specks. Approach no nearer to the south shore than in 50 fathoms; and, as you edge off to the N.W. and W.N.W., you will fall off the bank, and have no soundings."

Farther Directions *for Sailing into the* Harbour; *by the same.*

"When you have passed Meogenes Island, edge in-shore towards Rocky Point, [or the Shag Rock] until Meogenes Point; [*Negro Head*] is in a line over the N.W. corner of Meogenes Island: sailing in between Rocky Point and Partridge Island, with these marks in one, will lead you in the best water over the bar, (15 feet,) until you open Point Maspeck to the northward of the low point on Partridge Island; then starboard your helm, and edge towards Thompson's Point, until the red store, at the south end of St. John's, is in a line over the beacon: keep them in one until you pass the beacon at the distance of a ship's breadth; then haul up N.N.W. up the harbour, keeping the blockhouse, at the upper part of the harbour, open to the westward of the king's store, situate close to the water side, which will lead you, in mid-channel, up to the wharfs, where you may lie aground dry, at half-tide, and clean your ship's bottom, or lie afloat in the stream at single anchor, with a hawser fast to the posts of the wharfs on shore.—N.B. The tide of flood here is weak, but the ebb runs very rapidly all the way down past Meogenes Island.

Remarks on St. John's, &c.; by Mr. Lockwood *and* Capt. Napier.

The tides of the river, at full and change, flow till half-past eleven. The vertical rise is 18 feet. Equinoctial spring-tides rise 24 to 28 feet.

After the first quarter flood, the tide below the surface runs into the harbour.

During summer, and the depth of winter, the tide generally flows in at half-flood.

In autumn, the river is swoln by rains, and between the beginning of April and the middle of May, by the melting of the ice, and the great quantity of snow that accumulates on the lands of this vast navigable river.

From these causes, the water streams out, to seaward, continually; therefore vessels, at that time, seldom enter the harbour, without a fresh leading wind. The falls are then impassable, as the tide does not rise to their level.

The body of the river is 17½ feet above low water-mark. Consequently, after the tide has risen to that height, the water descends, or literally falls into the river.

When the tide has flowed twelve feet, the falls are smooth, and passable for twenty minutes.

Above the Falls the tide rises 4 feet; and, at Majorfield, 60 miles in the interior, it rises one foot and a half. After passing the Falls, you enter a gullet, which is a quarter of a mile wide, and two miles long, winding in different courses, and having 16 fathoms in the channel. Next to this gullet, is a fine large basin, a mile and a half wide, and eight miles long, entering the main river. There is water sufficient, except in dry seasons, for vessels of fifty tons, as high as Fredericton, and in all the branches of the lakes. In the middle of May, or earlier, in favourable seasons, the snow and ice in the country melting, make a general overflow in the river, which, in some years, rises so high as to inundate all the low lands. "The overflowings were measured, in 1765, by the marks set up at Majorfield; the water was found to have flowed 17 feet above the common height of the water in summer." (Remarks by Chas. Morris, Esq.)

Of the Tide, *Captain Napier*, R.N., when commanding H. M. sloop, *Jaseur*, has said, "The great volume of fresh water which constantly runs down the Harbour of St. John,

St. John, in April and May, causes *a continual stream outward* during that period, sometimes to the depth of nearly 5 fathoms, under which the flood and ebb flow regularly: the maximum of its velocity we found to be 4½ knots, and the minimum 2 knots; but, as the log floated very deep in the fresh water, and ultimately sunk in the salt water running underneath, it would not be too much to estimate the maximum at 5 knots, and the minimum at 2½. The fact of the under tide beginning at the depth of nearly 5 fathoms was ascertained by sinking a lead down to that depth, when it was carried the same way as the current on the surface; but, when lowered below that, it was carried in a contrary direction."

St. JOHN'S TO PASSAMAQUODDY.—From Cape Maspeck, *Negro Head*, the opposite extremity of the Bay of St. John, bears W. ¼ S. 5¼ miles; and the coast from Negro head to *Cape Musquash* trends W.S.W. 4 miles. A remarkable rock, the *Split Rock*, marks the cape; and, at a mile farther westward is the entrance of *Musquash Harbour*, a well-sheltered cove, in which there is good anchoring ground in 3 and 4 fathoms.

An irregular coast now succeeds to *Point Lapreau*, 10 miles W.S.W. ¾ W. Near the middle of it are the inlets called *Dipper* and *Little Dipper*, which admit small craft and boats. Between St. John's Harbour and Point Lapreau the shore is generally bold; the land broken and high. Many accidents have happened in the vicinity of the point, and it should, therefore, be approached with caution.

POINT LAPREAU.—A LIGHTHOUSE has been erected on *Point Lapreau*, which was first lighted on the 1st of November, 1831. It exhibits two *fixed lights*, one above the other, and distant 18 feet. The lower lantern is fixed to the outside of the building, and shows its light quite in with the shore to the eastward, and westward into Mace's Bay, within the outer ledges. The light bears from the easternmost of the Wolves E. by N., 11 miles, and from Head Harbour Light, (Campobello Isl.) E. ¼ N. about 20 miles. The distance hence along shore, to a sight of Partridge Island, St. John's, is 6½ leagues.

At five miles N.W. from Point Lapreau is *Red Head*. The irregular indent between is *Mace's Bay*, a deep and dangerous bight, in which several vessels have been embayed and wrecked. On each side are several clusters of islets and rocks, but there is a good place of shelter, *Poklogan*, at the head of it; and there is good anchorage in the centre, in 3 or 4 fathoms, which will be obtained by entering near the western shore.

GRAND MANAN.—This island, 11 miles in length, from N.N.E. to S.S.W., by 4 or 5 in breadth, is included in Charlotte County, in the Province of New Brunswick. The nearest distance from the opposite coast of the State of Maine is two leagues. The western side is very high; its cliffs being nearly perpendicular, and about 600 feet high above the level of the sea. On this side is but one little inlet, *Dark Cove*, which affords shelter for boats only. The northern head, *(Bishop's,)* is equally abrupt and bold; but to the south-eastward of it is *Whale Cove*, having anchoring ground, with 25 to 15 fathoms, in which ships may stop for a tide, during a southerly gale, but it is exposed to the north.

The Eastern Coasts of Manan abound in fish, and the interior is in a rapid state of improvement. The soil is, in general, good, and it produces all the species of fir, beech, birch, and maple, in size and quality adequate to all purposes for which they are generally used. The population, in 1816, amounted to 384 persons, chiefly from the United States.

To the S.E. of Whale Cove, on the same side of the island, is *Long Island Bay*, so called from the island on the S.E. side of it. The N.E. point of this bay, called, from its shape, the *Swallow's Tail*, is high, bold, rugged, and barren. The bay is open, but possesses all the advantages of a harbour: the bottom is wholly of mud, excepting a ridge of rocks and gravel that shows itself within the Swallow's Tail, and the north end of Long Island: there is, also, a small cluster of sunken rocks, of 5 feet at low water, at half a mile from Long Island Point.

Under Long Island, and opposite to the beach, ships may anchor, even locking in the north end of Long Island with the Swallow's Tail, on a strong muddy bottom, entirely sheltered from the wind and sea. In the northern part of the bay, bottom of stiff clay, vessels have frequently been protected during a severe gale.

Half-

Half-way down off the eastern coast of Great Manan, at a mile from shore, is Great Duck Island, under which there is good ground; but here a pilot will be required, as there are hidden dangers in the vicinity. To the south-westward and southward of Duck Island lie *Ross, Cheney,* and *White Head Islands:* the latter occupied by a skilful and intelligent pilot: from these the rocks and foul ground extend 6½ miles to the S.S.E.

On the southern bank of Great Manan the most dangerous ledge is that called the *Old Proprietor,* which lies two leagues S.S.E. from White Head Island, and covers the space of half an acre at low water; it is dry at half-ebb. When covered, the tide sets directly over it, at the rate of four miles an hour. The S.W. head of Manan open of all the islets off the south side of that island, will lead clear to the southward of it. The north-easternmost high land, open of the islets on the east, leads clear to the eastward of all the dangers. During an easterly wind, the tide-rips are impassable.

The THREE ISLANDS, (KENTS,) the southernmost of the Manan Islets, are low and ledgy. The eastern side of the largest is bold to the rocks, which are at all times visible. Off the N.W. of these rocks is a ledge called the *Constable,* dry at low water. These isles, with Green Islets, to the northward of them, afford occasional anchorage, in from 14 to 7 fathoms.

WOOD ISLAND, on the south side of Manan, with the *S.W. Head* of the latter, form a bay containing excellent ground. The upper part and head of it, in a gale of wind, are places of security; and here supplies, if requisite, may be obtained from the inhabitants.

Between Wood Island, on the S.W., and Ross Island, on the N.E., is the passage to GRAND HARBOUR, a shallow muddy basin, into which you may enter by passing near the *Green Islets.* It is a convenient place for vessels without anchor or cable, as they may lie in the mud, in perfect security. At the entrance, which is narrow, the depths are from 6 to 3 fathoms, bottom of clay.

The GANNET, a small rock, 40 feet high, and having many sunken rocks and ledges about it, stands at the distance of 3½ miles S.S.W. from the Three Islands. Mr. Lockwood, several years ago, observed that this would be a fine situation for a lighthouse, which would be the mean of saving many ships. The ledges and sunken rocks in the vicinity always break.

The lighthouse has been erected, and was lighted, for the first time, on the 1st of December, 1831. It shows a fixed light, of a *bright red colour,* to distinguish it from other lights in the vicinity.*

The three low islets, called MACHIAS SEAL ISLES, lie 10 miles to the W. by N. of the Gannet, with the S.W. Head of Grand Manan bearing E.N.E. about 3 leagues distant.

LIGHTS on MACHIAS SEAL ISLES.—On the southernmost of these isles are two lighthouses, first lighted in September, 1832. They stand at some distance apart, exhibit brilliant *fixed* lights, and bear from each other, when in a line, E.S.E. and W.N.W., with the keeper's house between them.

The CHANNEL between GRAND MANAN and the coast of the State of MAINE is from

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* *The Commissioners of Lighthouses,* in their specification of the lighthouse, annexed thereto the following remarks, dated St. John, 4th Oct. 1831.

This light, from its proximity to several very dangerous ledges and shoals, ought not to be run for; it is intended to give timely warning to vessels which are, by the rapid tides about these ledges, frequently drawn into danger, and too often wrecked.

The dangerous shoal called the *Old Proprietor,* which dries at three-quarters ebb, bears from this lighthouse E. ½ S. about 7½ miles. St. Mary's Ledge, dry at all times, S.W. by W. ½ W. 1½ miles. Northerly from this ledge, the whole space westerly from the lighthouse, for the distance of five miles, is full of dangerous ledges, (several of them dry at high water,) called the *Murr Ledges:* the inner or northernmost of these ledges bears from the light W.N.W. nearly, and is dry at two-thirds ebb.

Within the Murr Ledges, there is a clear channel round the south-west head of Grand Manan, which bears from the lighthouse N.W. ¼ N. about 7½ miles. Black Rock, off White Head Island, bears N.E. ¼ E. about 8 miles. Vessels, except in cases of extremity, ought not to attempt running between this rock and the Old Proprietor, as there are some dangers in the way, the ground rocky, and the tides very rapid.

The S.W. point of the *Machias Seal Islands* bears from this lighthouse W. ½ S. 12 miles, and the N.E. rock off these islands W.N.W. about the same distance.

9 to 6 miles wide: both shores bold, the depths quickly increasing on each side, from 12 to 70 and 75 fathoms; the greatest depth near Manan, where you haul quickly from 10 to 75. This is the best passage up the Bay of Fundy, because the safest, and most advantageous with the prevalent winds, which are from the westward.

The WOLF ISLANDS, which lie seven miles to the N.E. by N. from Grand Manan, are from 60 to 100 feet in height, steep and bold. The passages between them are deep, and they afford temporary shelter, in the depth of from 20 to 12 fathoms. Between Manan and these isles, the depths vary from 70 to 40 fathoms, bottom of oaze and mud.

PASSAMAQUODDY BAY.—The Bay of Passamaquoddy, with the Chapeneticook River, or River of St. Croix, divide CABOTIA from FREDONIA, or the British American territory from that of the United States.* The south-western side of the bay may be distinguished by a lighthouse, on Quoddy Head, which was erected by order of Congress, in the year 1808. This structure exhibits a *fixed light*, which, in clear weather, may be seen seven leagues off. Its lantern is 90 feet above the sea. Near the lighthouse is an alarm-bell, which, during foggy weather, will strike ten times in a minute: its sound, in calm weather, may be heard five miles off. From the north head of Grand Manan the lighthouse bears W.N.W. ¼ W. 7 miles; and from the Machias Seal Islands N.N.E. ¾ E., 17 miles.

Seal Rocks.—At about one quarter of a mile without Quoddy Head lie two remarkable rocks, called the *Seal Rocks*, which, at a distance, resemble a ship. To the eastward of these there is a whirlpool. In passing here it is therefore requisite to give these objects a berth of half or three-quarters of a mile before you haul in.

There are several passages into Passamaquoddy Bay; but particularly the southern, (commonly called the *Western*,) the *Ship Channel* or *Middle Passage*; and the *Northern* (commonly called the *Eastern*) *Passage*. The first is that between the isle of Campobello and the main land to the S.W. The Ship Channel is that between Campobello and Deer Island; the Northern Passage is that along the New Brunswick shore.

At 2¼ miles N.E. ½ E. from the northern extremity of Campobello is the *White Horse*, appearing at a distance like a white rock; but it is really a small islet, barren and destitute of trees, while the isles about are covered with them. It, therefore, serves as a beacon.

At the N.E. end of Campobello is *Head Harbour*, a place of easy access, small, but perfectly safe, with 6, 7, and 8 fathoms, muddy bottom. *A good light* was first exhibited on the extreme point of this harbour, 1st Nov. 1829. The fine harbour, called *Harbour Delute*, lies on the west side of the island; and, at its S.W. end is *Snug Cove*, another good harbour, where there is a British custom-house. *Moose Island*, on the opposite side, belongs to the United States, and British ships are not allowed to ride there above six hours at any one time. In a fine cove at the south end of this island a ship of 500 tons may lie, moored head and stern, safe from all winds, but the anchors are very much exposed with wind from the East.

QUODDY HEAD, on which stands the lighthouse above mentioned, forms the south side of the Southern Passage, the entrance of which, between Campobello and the Head, is a mile in breadth, but the passage gradually narrows to the W.N.W. and N.N.W., and at two miles up a rocky bar stretches across, which is dry at low water. At rather more than a mile within the entrance, you may come to anchor, in 4 or 5 fathoms, well sheltered, either by day or night. Here a pilot may be obtained, on firing a gun, and making the usual signal, who will take the ship to Snug Cove or Moose Island, whence another may be obtained for St. Andrew's, the River Scoodic, or St. Croix, &c.

LARGE SHIPS, for PASSAMAQUODDY BAY, pass to the eastward of Campobello, steering N.E. by E. and N.E. towards the Wolf Isles, which lie about 6½ miles eastward from

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* In November, 1817, the Commissioners appointed by the respective governments, under the treaty of Ghent, (the last treaty of peace,) decided that Moose, Dudley, and Frederic Islands, in the Bay of Passamaquoddy, do belong to the United States; and that all the other islands in the same bay, with Grand Manan, in the Bay of Fundy, do belong to Great Britain, by virtue of the treaty of peace of 1783. The citizens of the United States continue to enjoy the right of navigating through the Ship Channel, between Deer Island and Campo-bello; and, of course, through the channel between Moose and Deer Islands.

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the northern part of Campobello. So soon as the passage between Campobello and the White Horse bears W.N.W., steer for it, leaving the White Horse at a distance on the north or starboard side, and keeping Campobello nearest on board. You will now, proceeding south-westward, leave a group of islands on your starboard side, and will next see Harbour Delute above mentioned.

Between the Wolves and the north end of Campobello, there is a depth of from 60 to 100 fathoms. With the latter bearing S.S.E. or S.E., there is a depth of 19 and 20 fathoms, where ships may anchor securely from all winds. The courses thence to Moose Island are S.W. by W. ½ W. and S.W. 5 miles.

If bound from Moose Island up the River Scoodic, as you pass *Bald Head*, opposite Deer Island, give it a berth of half a mile, as a ledge of rocks lies off it. Having passed this point, the course and distance to *Oak Point*, or Devil's Head, will be N. by W. 4 leagues. The latter may be seen from the distance of 10 or 12 miles.

St. ANDREW'S.—*The Town and Port of St. Andrew* lie on the eastern side of the entrance of the Scoodic. A small island, *Navy Island*, forms the harbour. This island is bold-to on its S.W. side, but eastward of it is a shoal bank, stretching nearly half a league from St. Andrew's Point. The town is a pleasant little place, and the harbour being good, many ships load timber here, which is generally much longer than that of Nova-Scotia. The merchants of this town load timber also at other places; viz. at Oak Bay, on the Scoodic, and at Rushabec, Didiquash, and Magadavick, on the N.E. side of Passamaquoddy Bay, all being excellent and very convenient harbours. In the bay, in general, are from 17 to 25 fathoms of water.

ETANG HARBOUR, which lies to the eastward of the North Passage of Passamaquoddy Bay, is recommended to the mariner as one of the best and most convenient harbours in British America. It has two entrances, which, though narrow, have very deep water, and either may be taken, according to circumstances. The principal one is a mile and a half N.E. by N. from *White Horse Isle*, between two islands, *Pain* and *Bliss*. To run into this place, bring the centre of the White Horse to bear S.W. by S., and run northward, with that bearing, until you are past a low flat rocky point on Bliss or Etang Island. Having passed this point, keep the island close on board until you come up to a ledge which shows itself, and which lies off a round island covered with trees on the larboard side. The ledge is bold close-to. Having advanced thus far, you may anchor near the centre of the harbour, inclining under the north shore, in 8 or 10 fathoms. The only inconvenience here is, the extreme tenacity of the ground, for which every precaution should be taken, that the anchor may not be lost. As the rise and fall of the tides is considerable, a sufficient scope of cable should, of course, be allowed.

BEAVER HARBOUR.—At 5 miles E. by N. from the entrance of Etang Harbour is that of *Beaver Harbour*, another snug place of shelter, with 15 to 11 fathoms at the entrance, and 5 in the centre. In sailing in, keep the west shore on board, as a reef stretches half way over from the opposite side: in the line of this reef are 3 and 4 fathoms. From the S.E. point of the harbour, Point Lepreau, noticed on page 37, bears E.S.E. ¾ E. 11 miles.

TIDES.—Within the Southern Passage of Passamaquoddy Bay common tides rise from 20 to 25 feet. At Moose Island the tide flows at XI½, full and change; and runs, when strongest, between Moose Island and Marble Island, and between Deer Island and Campobello, nearly five miles an hour. In the bay, the stream of tide is scarcely perceptible. On the eastern side of Grand Manan it is high water at X h. springs rise 25, and neaps 20, feet.

BEARINGS *and* DISTANCES *of* PLACES *in the* BAY *of* FUNDY.

(Variation 15° West, 1826.)

From		*Magnetic Bearing.*	*Distance. Miles.*
Bryer's Island Lighthouse to	Machias Seal Isles	N.W. ½ W.	32
	the Gannet Rock Lighthouse	N.W. by N.	22
	the Old Proprietor	N. by W. ½ W.	18
	the Southern Wolf	N. ¾ W.	40
	Point Lepreau	N. by E.	44
	St. John's Harbour	N.N.E. ½ E.	55
Machias Seal Isles to	Little River Head	N. by W.	9
	the N.W. Head of Grand Manan	N.E. ½ E.	18

From

From	(Variation 15° West, 1826.)	Magnetic Bearing.	Distance. Miles.
Machias Seal Isles to Quoddy Head Lighthouse		N.N.E. ¾ E.	17
	the Southern Wolf	N.E.	26
Little River to the S.W. Head of Grand Manan		S.E. by E. ½ E.	12
	N.W. Head of Grand Manan	E. by N.	16
Quoddy Head Lighthouse to the Southern Wolf		E.N.E.	11
	the North Head of Grand Manan	E.S.E. ¼ E.	7
	the S.W. Head of Grand Manan	S. ¼ W.	11
	Machias Seal Isles	S.S.W. ¾ W.	17
Head Harbour to White Horse Islet		N.E. ½ E.	2½
	the Northern Wolf	E. ½ S.	7½
	the Southern Wolf	E.S.E.	6½
	the North Head of Grand Manan	S. by E. ½ E.	9½
White Horse Isle to the Ship Channel		S.W. by W.	2½
	Latete or North Passage	N. ½ W.	2½
	Etang Harbour	N.E. by N.	1½
	Beaver Harbour	E.N.E. ¼ E.	6
	Point Lepreau	E. ¼ S.	17½
	the Northern Wolf	E.S.E. ¼ E.	6½
	the Southern Wolf	S.E.	6
	the N. Head of Grand Manan	S. by E.	11
West Entrance of Etang Harbour to Head Harbour		S.W. by S.	4
	North End of Grand Manan	S. ½ E.	13
Etang Harbour, South Point, to the Northern Wolf		S.E. by E.	4½
	the Southern Wolf	S.E. by S.	6
Northern Wolf to a Vigia or Shoal?		E. ¼ N.	7
	Point Lepreau	E. ½ N.	11
	Beaver Harbour	North.	4
Point Lepreau to the Gut of Annapolis		S.E. ½ S.	34
	Petit Passage	S. ¼ E.	37
	Grand Passage	S. ¾ W.	42
	Bryer's Island Lighthouse	S. by W.	44
	North End of Grand Manan	S.W. by W.	19
	Beaver Harbour Head	W. by N.	11
	Etang Harbour, South Point	W. ¼ N.	16

GENERAL REMARKS ON, *and* DIRECTIONS *for, the* BAY *of* FUNDY.

SHIPS navigating the BAY of FUNDY have to encounter an atmosphere almost constantly enveloped in thick fogs, tides setting with great rapidity over the rocks and shoals with which it abounds, and a difficulty of obtaining anchorage, on account of the depth of water: so that, under these circumstances, the most unremitting attention is requisite, in order to prevent the disastrous consequences which must necessarily attend a want of knowledge and caution.

When off Cape Sable, with a westerly wind, and destined for the Bay, it is best to make the coast of the United States about the Skuttock Hills and Little Manan lighthouse, described hereafter; as you can pass with greater safety to the westward of Grand Manan than to the eastward, and can have shelter, if required, in the several harbours of that coast.

Between *Grand Manan* and the coast of *Maine* the passage is free from danger; vessels beating through, generally stand from side to side, particularly in fogs, the depth being from 12 to 72 fathoms, with a bold shore on each side, and the tide through regular and strong. The Wolf Islands may be passed on either side, having deep water close-to: but afford no sheltered anchorage, except for small fishing vessels in summer time: they are, as already noticed, from 60 to 100 feet high. With light winds, a lee tide, or thick weather, you may let go an anchor any where between the Wolf Islands and Beaver Harbour, in good holding ground, in a depth of 20 or 25 fathoms. Point Lepreau is bold-to, but was formerly dangerous in dark weather, as it projects so far into the sea

Its light-house, with double lights, as described on page 37, is now an excellent guide. Hence to St. John's the course is free from danger.

When steering between *Grand Manan* and *Bryer's Island*, the utmost caution is requisite during thick weather, as vessels are frequently drawn amongst the islands and ledges to the southward of Manan, by the flood's setting directly on them: the most dangerous of these is the *Old Proprietor*, which at low water is uncovered for the space of half an acre. When the wind, therefore, veers at all to the southward, make the best of your way to St. John's Harbour, or you may secure an anchorage in Grand Passage, or St. Mary's Bay, as it seldom blows in that direction above eighteen hours without bringing on a fog.

The PREVAILING WINDS here, and on all the coast of Nova-Scotia, are from W.S.W. to S.W., nearly as steady as *trade-winds;* excepting that, during the summer months, they are rather more southerly, accompanied with but little intermission by fog, which requires a north-westerly wind to disperse it. It is, therefore, recommended not to leave an anchorage without making arrangements for reaching another before dark, or the appearance of a fog coming on, which, with a S.W. wind, is so sudden, that you are unawares enveloped in it; nor to keep at sea during the night, if it can be avoided. Whenever the wind blows directly off the land, the fog is soon dispersed.

The TIDES *are very rapid*, but regular; and, although the wind against them alters the direction of the rippling, and sometimes makes it dangerous, it has little or no effect upon their courses. The flood sets from Cape Sable to the north-westward through the Seal Islands and Bald-Tuskets, at two or three knots in the hour; after which its rate increases to four or five knots, thence taking the direction of the shore, it flows past Cape St. Mary, and then N.N.W. towards Bryer's Island; it sets but slowly up the extensive Bay of St. Mary, which adds to its strength along the eastern shore; then increasing its rapidity as the Bay contracts, it rushes in a bore into the Basin of Mines, and up Chignecto Bay.

Between Bryer's Island and the opposite northern coast, and for some distance up the Bay to the eastward, the first of the flood sets strong to the northward (nearly North); so that it will be extremely dangerous for a vessel to run in the night or thick weather, from any part of the southern to the northern coast, without making a large allowance for the set of the tide, and keeping the lead constantly going. H. M. sloop Jaseur was nearly ashore, having been set by this tide in a fog 8½ miles in 3 hours and 10 minutes.

IV.—*The* COASTS *of* FREDONIA, *or of the* UNITED STATES, *from* PASSAMAQUODDY *to* CAPE COD, &c.

THE most remarkable elevations of land between the Bay of Passamaquoddy and Cape Elizabeth are, the *Skuttock Hills*, *Mount Desert Hills*, and *Hills of Penobscot*. The Skuttock Hills are five in number, and, at a distance, appear round; they stand to the northward of the Port of Gouldsborough, and are readily distinguishable from any hills to the eastward. The Mount Desert Hills may, in clear weather, be seen from a distance of 15 to 20 leagues. The Penobscot Hills may be seen to the N.W. and N.N.W. over the Fox Islands. When within 4 or 5 leagues of the Mount Desert Hills, the Skuttock Hills will bear about N.N.E.

In sailing towards this coast, the new lighthouse on Mount Desert Rock will be seen: this rock lies 7½ leagues to the southward of Mount Desert Island, in latitude 43° 52′, and longitude 68° 3½′; observe here to make proper allowance for the tide, &c. At Mount Desert Rock, the stream of flood divides to run westward and eastward. With the Skuttock Hills about N.N.E., and within 4 or 5 leagues of those of Mount Desert, the tide of flood sets E.N.E., and the ebb W.S.W.; but at the distance of 9 or 10 leagues from the land, the current, in general, sets to the S.W., and more westward. From the Mount Desert Rock to the Fox Islands the flood-stream sets W.S.W. along shore; but it still runs up to the northward into Blue Hill Sound, Isle Haute Bay, &c.

The LIGHTHOUSE on MOUNT DESERT ROCK is conspicuous; and it exhibits a *brilliant fixed light*, which commenced on the night of the 20th of August, 1830.

MACHIAS BAY.—The entrance of the BAY or PORT of MACHIAS, in the State of Maine,* bears N.W. ½ W. [*N. 64° W.*] 14 leagues from Bryer's Island Lighthouse; N.W. by W. ¾ W. [*W. by N.*] 22 miles from the new lighthouse on the Gannet Rock; and N.W. ½ W. 10½ miles from the lighthouses of the Machias Seal Isles. The last mentioned point and Gannet Rock are nearly *true* East and West from each other, at the distance of 12 miles, and between them lie several dangerous ledges. Of these ledges, the southernmost, called *St. Mary's*, is a mile and three-quarters W.S.W. from the Gannet.

Directly fronting the Entrance of Machias, within the distance of a league, are two little isles called the *Libee* or *Liby Isles*, on the southernmost of which is a new *light-house*, exhibiting a fixed light, in or near latitude 44° 36½, and elevated 60 feet above the level of the sea. At a league N.E. ½ N. from this lighthouse is the S.W. end of *Cross Island*, which forms the eastern side of the entrance to the Bay.

On advancing towards Machias Bay from the Seal Isles, and steering N.W. ½ W. you will gain sight of the *Libee Isles Lighthouse;* which is to be left on the larboard side; rounding these isles, you thence proceed North into the Bay. On this course you will leave a large white rock, called the *Channel Rock*, on your larboard side: and, unless bound upward, into Machias Harbour, may haul to the westward. When you have advanced half a mile above this rock, bring a high round island, which is covered with trees, to bear North, when you may anchor in 4 or 5 fathoms, muddy bottom. If you mean to go up to the town of Machias, keep on a north course, until you have advanced above a high round island on your larboard hand, when you may steer W.N.W. or N.W. by W. for a point covered with birch-trees, and having a house on it. On the starboard hand there are flats and shoals. You may keep on the larboard after you pass this house, until the river opens to the northward, when you may run up to Cross River, and anchor in 4 fathoms.

MACHIAS is the chief town of Washington County, in the state of Maine. Its present population is about 2500 persons.

LITTLE RIVER HARBOUR is about a league and a half E.N.E. from Cross Island. It may afford occasional shelter. The entrance bears N.W. by W. ½ W. 4 leagues from the S.W. Head of Grand Manan, and N. by W., 3 leagues, from the western Seal Island. It cannot be seen until you approach the northern shore; and the pilots say you should not run for it before it bears N.W. or N.N.W. There is a bluff point of rocks on the starboard hand, going in, and an island in the middle of the harbour. On going in, leave the island on your larboard side, and when you have passed it half a mile you may anchor in 4 or 5 fathoms, muddy bottom, and be protected from all winds. The land between this harbour and Quoddy Head trends N.E. by E. 4 leagues.

MACHIAS to GOULDSBORO'.—In proceeding from Machias towards Gouldsboro', you will pass numerous islands on the starboard hand, with many inlets and good harbours, but generally too intricate for strangers to attempt with safety. On quitting Machias Bay, you first pass the *Libee Islands*, thence *Head Harbour Island*, the *Wass Islands*, &c. The course and distance from off the Libee Islands to a berth off the Great Wass Island are S.W. by W. 10 miles, and from the latter to the Little Manan Isle W. by S. 13½ miles.

On the S.E. point of Head Harbour Island, off *Moospecky Beach*, is a *new lighthouse*, which exhibits a *revolving* light, and is, therefore, readily distinguished from that of the Libee Isles, 8 miles to the N.E., and another on the *Little Manan*, at 5 leagues to the S.W. At the distance of six or seven leagues, the interval of darkness will be longer

* The STATE, formerly DISTRICT, of MAINE, is bounded on the East by New Brunswick, as already noticed, and on the West by New Hampshire. The face of the country is generally hilly, but not mountainous. The coast indented with bays, and abounding with excellent harbours. The soil, on the sea-coast, is stony and barren, but more fertile in the interior, producing grain, grass, &c. The minerals are iron, copperas, sulphur, and ochres. The summer here is short, but agreeable; the autumn clear and healthy; winter long and severe; spring, as in Canada, very short. The Penobscot, Kennebec, Androscoggin, and Saco, are its principal rivers. This state is not yet thickly peopled, but slavery is here unknown. Portland, the seat of the provincial government, is situate on a good harbour in the S.W., as described hereafter. The ports of entry for foreign ships are Machias, *Frenchman's Bay*, Castine or Penobscot, Wiscasset, *Bath*, *Portland*, *Falmouth*, Saco, and Pepperelboro'. The names printed in Italics are those of ports to which vessels from or beyond the Cape of Good Hope are restricted.

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than the duration of light; but, on approaching, the time of darkness will diminish, and that of light increase. Within the distance of 5 or 6 miles, there will still appear a small interval of darkness; but, in the revolutions, the greatest power of light will be to the least as twenty-four to one.

On Little Manan, a small islet, is a lighthouse of stone, which exhibits a *fixed light*, at 58 feet above the level of the sea, although the building itself is only 25 feet high. From the Lighthouse the entrance of the Port of Gouldsboro' bears N.W. ¾ N. 4½ miles. At the entrance is an islet covered with trees on the eastern, and two on the western, side. Within the entrance, the harbour is a mile wide, and you may anchor in from 4 to 6 fathoms, where you please. The course in is N.N.W. then N. ½ W. 4 miles; and thence W. by N. to Gouldsboro'.

The *Skuttock Hills*, already mentioned, form a good mark for Gouldsboro', as they lie to the northward of the harbour. Hence, by bringing them in that direction, and steering on that course, you will, on approaching the harbour, see the Little Manan Lighthouse, which is to be left on the starboard hand.* The latter stands at about a league to the southward of the point between *Dyer's Bay* and *Pigeon Hill Bay*: it is connected with the land by a rocky ledge or bar, which is partly uncovered with the ebb.

DYER'S BAY.—Immediately to the eastward of the entrance to Gouldsboro' is *Dyer's Bay*, which you may enter by giving Little Manan a berth of half a mile, leaving it on the starboard hand. If you bring the light to bear N.E., at three-quarters of a mile, a N. by W. course will carry you into the mouth of the bay, leaving a large dry ledge on the larboard hand: when abreast of this ledge, which is bold-to, give it a berth of 15 or 16 fathoms, then steer N. ½ E. about 4 miles, where you may anchor, safe from all winds, in 4 or 5 fathoms, muddy bottom.

PLEASANT BAY, or the Mouth of *Pleasant River*, is two leagues to the N.E. of Little Manan Lighthouse. Here you pass the islet called *Tit-manan*, and several dangerous ledges. For this place, therefore, as in all the other harbours of this coast, a pilot is indispensible.

From Little Manan Lighthouse to a berth off the Great Wass Island, already noticed, the course and distance are E. by N. 13½ miles; and from the latter to the Libee lighthouse, off Machias Bay, N.E. by E. 10 miles.

GOULDSBOROUGH to BLUE HILL BAY.—At two leagues without the harbour of Gouldsborough, to the S.W., is Scoodic Point, with its three islets, forming the west side of the entrance of FRENCHMAN'S BAY, or the N.E. harbour of Mount Desert. Next follow the *Cranberry Isles*, to the S.E. of the same island.

BAKER'S ISLAND, which is the outermost of the Cranberry Isles, is now distinguished by a Lighthouse, exhibiting a *brilliant fixed light*, which bears from that on the Little Manan W.S.W. [*S.W.* ¾ *W.*] 5 leagues.

To the S.S.W. of the Cranberry Isles are the *Duck Islands*, off the entrance of Blue Hill Bay, or the S.W. harbour of Mount Desert. To enter this harbour, leave the two Duck Islands on the starboard side, and *Long Island* with a cluster of other islands on the larboard. It is not safe for a stranger to run in during the night, as there is a great ledge, which is uncovered at half-tide, about one mile from the harbour. This is to be left on the starboard hand. There is also a long ledge on the larboard side, which extends half a mile off: there is, however, a good turning channel between. The S.W. passage is not fit for large vessels at low water; but, at high water, any one may enter, by keeping nearest to the starboard shore when sailing in. With the harbour open, you may steer N.W. or W.N.W., and anchor, when well up, in 5 or 6 fathoms, muddy bottom; where, with any wind, you will lie safely. Here, however, as in every other part hereabout, a pilot is required.

PENOBSCOT BAY AND RIVER.—This extensive bay is included between Point Naskeag, or Sedgwick Point, on the N.E., and White Head on the S.W.: the distance between these points is 9 leagues; and it therefore includes the Isle Haute, Deer Island, the Fox Islands, Isleborough or Long Island, and a multitude of small isles, rocks, and ledges. Through the bay, to the mouth of the river of its name, the western

* The pilots say that a ledge, called *Moulton's Ledge*, and dry at low tides, lies W. by N. 4 miles from the lighthouse: a sunken ledge, with 7 feet of water on it, S.E. by E. 5 miles from the same; another of 12 feet, S.S.W. 4 miles.

channel

channel is by the headland on the west, called *Owl's Head:* thence, by Isleborough on the west, and Cape Rosiere on the east, to Bagaduce Point or Castine River.

The *Eastern Entrance* is between Isle Haute on the west, and the smaller isles on the east, through a channel called *Long Reach*, formed by the shore of Sedgwick on one side, and Deer island on the other, until it unites with the main channel between Cape Rosiere and Isleboro' or Long Island. Above this, on the east, stands Fort Castine, near to which is the town of CASTINE, opposite to Penobscot, which was incorporated in 1796, and which now contains a population of above 2000 persons. Castine is the port of entry.

The noble river which empties its waters into the bay, and which is now decorated with numerous townships, is the most considerable in the state of Maine, and has its sources about 130 miles above the inlet of Castine. The head of tide and navigation is, however, at Bangor, about 30 miles from the same: but vessels of thirty tons may approach within a mile of this place. At the entrance of the river is a depth of 10 fathoms.

FROM MOUNT DESERT ROCK and Lighthouse (noticed on page 42) to WHITE HEAD, having also a LIGHTHOUSE, with a *fixed* light, the bearing and distance are W.N.W. 13 leagues. The light on White Head is elevated ninety feet above the level of the sea, and is, therefore, visible five leagues off.

By proceeding from Mount Desert Rock, on a W.N.W. course, you leave the Isle Haute and Fox Islands on the starboard, the Seal Rock, Metinicus Isles, and Green Islands, on the larboard side; and thus arrive off the *Muscle Ledge Islands*, which lie to the north-eastward of White Head lighthouse, on the western side of the bay. In pursuing this course, you will see, on the larboard side, the new lighthouse on Metinicus Island, having two lanterns, one at each end of the building, and exhibiting distinct fixed lights. When these lights appear in one, they bear N.N.W.

On the western side of the bay, at seven miles above White Head lighthouse, is *Owl's Head*,* having also a lighthouse, with *brilliant fixed lights*, at 150 feet above the level of the sea. The fairway course to this head is N.W. by N. Having advanced to this point you may bear away for either side of Isleborough or Long Island; proceeding, according to Chart, past Belfast Bay and Brigadier Island, keeping the larboard shore on board. When you pass Brigadier Island for Old Fort Point, *(Fort Pownall)* observe, before you come to it, that an extensive ledge of rocks lies about three-quarters of a mile to the E.S.E. of it, which is uncovered at half-tide. These rocks are readily discoverable, when the wind blows, by the breakers. You may pass within a cable's length of Fort Point in smooth water.

If bound up the river, from Old Fort Point, with the wind a-head, and an ebb-tide, you may make a good harbour in the East River, at about a league E.N.E. from that point. The entrance of this river is on the south side of *Orphan Island;* here you may lie safe from all winds, and anchor in 6 or 7 fathoms, good holding ground. You leave Orphan Island, and several rocks which are above water, on the larboard hand. If requisite, you may anchor to the N.W. of the island, on the starboard hand, before you pass through; but, with the wind and tide favourable, you may proceed up to Marsh Bay, keeping towards the larboard shore. *Marsh Bay* is a league and a half above Orphan Island. When passing it, keep nearly in the middle of the river, and you will have neither rocks nor shoals until you arrive at the Falls.

CASTINE.—TO SAIL UP TO CASTINE, &c. by the S.E. and eastern side of Isleboro', the course is N.E. by N., keeping the island on the larboard hand. To go into the harbour, by Bagaduce Point, so soon as the entrance bears E.N.E., run in on that direction, keeping the middle of the channel on your starboard side until you pass the first island, giving that island a berth of half a mile; then haul to the southward, until the island bears W.S.W., when you may anchor in 8 or 10 fathoms, muddy bottom, and lie safely from all winds. The tide here rises, on the full and change, 10 or 11 feet, and flows at 10h. 45 m.

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* *Owl's Head* forms a cove on its northern side, in which a vessel may take occasional shelter, as it lies open to the wind at E. by N. and E.N.E. The directions for sailing in are to bring a rocky point, which will be on the starboard side, to bear N.E. and a ledge of rocks that lie without that point E.N.E., and anchor in 4 fathoms, muddy bottom.

Hereabout the tide of flood sets to the north-eastward, and the tide of ebb S.W. through the Muscle Ridges.

To

To ENTER PENOBSCOT BAY, *from the S.W.—On approaching White Head,* or its lighthouse, be careful not to haul in for it until it bears N.E., as you will thus avoid the ledges of rocks lying without the head. Within these ledges, at about a pistol-shot from shore, there is a safe passage. In passing the head, to the eastward, you will see a good harbour, on the larboard hand, called *Seal Harbour*, and in which a vessel may lie safely with any wind. In going into this harbour, give the larboard shore a berth, in order to avoid a sunken ledge, extending about two-thirds over, and which breaks with any sea, excepting at high water.

Vessels of 60 or 70 tons may double close around the head of the light, and anchor right abreast of the store in the harbour. Those taken with calm and ebb tide may anchor any where off the light in from 12 to 20 fathoms. If the wind takes you at N.E and ebb-tide, so that you cannot get into *Seal Harbour*, you may run into *Tennant Harbour*, which bears W. by S. from White Head, about 4 miles distant. To gain this place, continue a W. by S. course until the first house on the starboard hand bears N.N.W., when you may anchor in 4 or 5 fathoms, good ground. *In sailing from Tennant Harbour*, you may steer E. by N. one league, toward White Island lighthouse; but be careful not to haul in for it till it bears N.E., as a large ledge of rocks bears about W.N.W. from the head to the distance of a mile.

COAST, &c. WESTWARD of PENOBSCOT BAY.—In the offing on the west, without the entrance of Penobscot Bay, is an islet, more than a mile long, named *Manhegin*, and from which White Head lighthouse bears nearly N.E., 5 leagues distant. It is the southernmost isle of this coast, and is represented in the charts in latitude 43° 44′, longitude 69° 11′.

Upon Manhegin (pronounced by the Fredonians *Monhegan*) there is now a lighthouse, showing a *revolving light* at 150 feet above the level of the sea. The light is composed of ten lamps with reflectors, five on each of two sides of an oblong square. The revolution is performed once in three minutes, and exhibits alternately, in that time, a *blood-red* and *brilliant light*. A N.E. course, for seven leagues, leads hence to the light on White Head.

From the High Light on Cape Cod Manhegin Isle bears N.N.E. ¼ E. [*N.N.E. ¼ N. true*] 35½ leagues.

From Manhegin Light the *Ball Rock*, or outer rock of the *Metinicus Groupe*, off Penobscot bay, bears nearly East, 19 miles; *Segwine Lighthouse*, off the River Kennebec, W. ½ N. 7½ leagues; the east end of the *Bantam Ledges*, off Booth Bay, W. ½ N. 5 leagues; the rock called the *Pumpkin* W.N.W. ¾ W. 4 leagues; *Penmaquid Point*, at the entrance of John's Bay, N.W. ½ W. 4 leagues; and *Franklin's Isle* lighthouse, in Broad Bay, off the entrance of George's River, N. ½ E., 8 miles.

George's River, &c.—For this river, the first to the westward of the Bay of Penobscot, particular directions have been published by the American coasters, but they are insufficient for a stranger without the aid of a pilot. The same remark applies to other harbours upon this intricate coast; for, in numerous instances, from want of description, the instructions embarrass rather than direct, and there is no chart which can be depended on. *Franklin's Isle*, above mentioned, is an islet about a league to the W.S.W. from the mouth of George's River; the lighthouse stands on the north side of it, and is to be left, when sailing for the river, on the right or starboard side. An E.N.E. course leads thence to Pleasant Point, on the north side of the entrance. The light is *fixed*, and at 50 feet above the level of the sea.

PENMAQUID POINT, the eastern point of *John's* or *Bristol Bay*, lying at the distance of four leagues N.W. by W. from Manhegin Island, is now distinguished by a lighthouse, having a *fixed light*, at 75 feet above the sea. Upon *Burnt Island*, near Booth Bay, at the distance of two leagues W.S.W. ¾ W. from Penmaquid Point there is, also, a fixed harbour light, immediately off the point which separates Damariscotty from Booth Bay and the harbour of *Townsend*.

KENNEBEC RIVER, Sheepscut River, &c.—The lighthouse on *Segwine Isle*, off the mouth of the Kennebec, has been already mentioned. Its lantern is 200 feet above the level of the sea, and contains a *fixed light* of the first class, which may be seen 9 or 10 leagues off. The position assigned to it is, latitude 43° 40½′, longitude 69° 42′. *Pond Island Light*, in the entrance of Kennebec River, bears N. ½ E. [*N. ½ W.*] from Segwine light, and a mile and three-quarters from Segwine Island. To enter the Kennebec

Kennebec River, you have now only to steer directly for Pond Island light, (a *fixed light*,) bearing N.N.E. which leads from the western side of Segwine directly to the river. Pond Island may be passed on either side.

On sailing in, you must have regard to the tide; for the ebb sets out very strongly South, directly on Segwine Island. If you have not a good breeze of wind, you cannot stem the tide, as it sets at the rate of 4 or 5 miles an hour. In going into the harbour you will leave a large island covered with spruce trees on your starboard hand, and several other islands on the larboard. When you get to the northward of the first island, if the tide be ebbing, you must steer for the *Two Sugar-Loaves:* these are two high rocks, which appear white, and resemble the figure indicated by their name:* when you pass to the westward of the Sugar-Loaves, you may steer North, and here take a pilot for the river, if bound upwards, as it should not be attempted without one. The port of BATH is at about 7 leagues up from Segwine lighthouse.

If BOUND to SHEEPSCUT RIVER, from the westward, and you make the island of Segwine, you may leave that island on the starboard side, giving it a berth of half a mile. When you pass it to the eastward, you must bring it to bear S.W., and steer N.E. and N.E. by N. 3 leagues, which will bring you up to *Ebenicook Harbour*, on the eastern side of the river, which is fronted by several islets; of this place, the entrance is narrow, but it makes like a basin when you get into it. The entrance in lies E. by N. You cannot get in with a N.E. or easterly wind, but must have the wind South or westerly. After you get into the harbour, haul up N.E. or N.E. by N., as there are several sunken rocks, on the starboard hand, as you go in. There is anchorage here in 4 fathoms, muddy bottom, safe from all winds.

If bound up Sheepscut River, in a *large vessel*, on coming from the westward, you must go to the southward of Segwine, steering about N.E. or N.E. by E. one league; and, when the river bears North, or North a little westerly, you may run North, and keep the starboard hand best on board. There are many rocks and ledges, some above and some under water, lying to the north-eastward of Segwine: when you get up as high as Ebenicook, you leave the two *Mark Islands* on your larboard, keeping your course North, a little easterly. Here it is requisite to have a pilot. The port of WISCASSET is about 5 leagues up from the entrance of the River.

BOOTH BAY, or TOWNSEND HARBOUR, is the inlet next eastward of Sheepscut River, and which may be known by the lighthouse on *Burnt Island*, with its *fixed light*. Its entrance lies between an islet called the *Cuckold* on one side, and reefs called *Bantam Ledges* with *Damiscove Isle* on the other, the distance between which is 2½ miles. With Burnt Island N. by E. you may run for it without danger; and thence, with *assistance*, proceed to the harbour of *Townsend*.

The "*American Coast Pilot*" says, "In coming from the westward, leave Segwine Island on your larboard hand, giving it a berth of about half a mile; then steer N.E. by E. three leagues,† when you will, if clear weather, open Townsend light on Burnt Island, bearing about N.N.E., but still continue your N.E. by E. course until Burnt Island bears N. by E.; then stand for it, continuing N. by E. and leaving it on the starboard hand till up the harbour. At about three-quarters of a mile N.N.E. from the light there is a small bold island, called *Mouse Island*, which you leave on your starboard hand; after passing it you haul up N.E. for the Eastern Harbour, or continue your course N. by E. till you get the Western Harbour to bear W.N.W., when you may run in till Burnt Island is shut in by the land: or, you may anchor any where within Mouse Island, as neither rocks nor shoals lie off from the land.

In coming for Townsend, from the Eastward, bring Manhegin Light to bear E.S.E. and steer W.N.W. about 13 miles; which course and distance will lead you into the passage between, and to the northward of, the outer islands and the main. In steering thus you will make Burnt Island light, bearing about N.W. by W.; then steer W. by N. until you get that light to bear N.W. Then haul up for it, keeping it on your larboard bow until up with it. You now steer N. by E. and follow the directions given above.

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* See the large Chart of the Coasts between Halifax and New York; which contains a particular Chart of Kennebec and Sheepscut Rivers, by the late Capt. Joseph Huddart, F.R.S.

† Say, according to Holland's Chart, 2½ leagues.—ED.

KENNEBEC RIVER to Cape Elizabeth and Portland.—From the lighthouse on *Manhegin Island* the elevated Light on Segwine Island bears West, 7½ leagues. From Segwine Lighthouse Cape Small Point and Fowler's Rock bear W. ½ N. 3 miles. From the same lighthouse that of Portland bears W. ½ S. 20 miles; the two lighthouses on Cape Elizabeth W. S.W. ¾ W. 20 miles; and Alden's Rock or Ledge S.W. by W. ¾ W. 18 miles.

The two Lighthouses on Cape Elizabeth, above mentioned, were first lighted on the 28th of October, 1828. They stand at 300 yards from each other, and at about the same distance from the sea-shore. The lanterns are 140 feet above the level of the sea at high water. The N.E. light is a *fixed light*, and the S.W. a *revolving*, showing a brilliant light and obscuring alternately, every minute and a half. The two lights bear from each other S.W. ½ W. and N.E. ½ E.

From the N.E. light, Segwine Lighthouse bears E. by N. ¼ N., 24 miles: Wood Island Lighthouse, in Saco Bay, S.W. ½ W., 10½ miles; Portland Head Light, N. ¼ E., 4 miles.*

To the westward of Cape Elizabeth, near Richmond Isle, is a windmill, which is the first windmill seen in coming in from the eastward.

NEW MEADOW'S RIVER.—At N.E. by E. ¾ E, 6 leagues from Cape Elizabeth, and half a league West from Cape Small, is the mouth of *New Meadows River*, a large inlet, which presents ample shelter and safety, during an adverse wind, to those bound *eastward*. Of this river, the "*American Coast Pilot*" says, "If you should fall into it with the wind at S.E. or S.S.E. when bound to the eastward, you may here make a good harbour. On standing in, to the northward, you will have a large round island on your starboard hand, covered with spruce-trees, together with two large rocks, one called the *Brown Cow*, and the other the *White Bull*, which are at some distance from each other.

"You must leave the Brown Cow on your starboard, and the White Bull on your larboard, hand; toward the latter you may go within a cable's length, and, when you have passed it, must stand over for *Horse Island*, having a house on it, and lying on the starboard side; to this you may go within a quarter of a mile. To the westward of Horse Island is a large rock, covered at high water, but bare at half-tide: you may go on either side of it when it is in sight, but the widest passage is to the eastward. When you have passed this rock, steer N. by W. or N.N.W., which course will carry you up to a large island, called *Bear Island*, which is covered with spruce and birch trees. When you have passed this island to about one quarter of a mile, you may haul in for the starboard shore, and anchor in 5 or 6 fathoms of water. This is the best place for anchoring with the wind at S.S.E. or East; but be cautious of a ledge of rocks, extending northward from the island to about half a mile off.

"If you have lost anchors and cables, there is a large cove, on the starboard hand, bearing about North, and two miles from Bear Island, and which is sufficient to contain thirty or forty sail of vessels. It is land-locked around, so that no wind can damage a vessel after she gets into it."

HARPSWELL SOUND.—On the *Little Mark Island*, off the west side of the entrance of *Harpswell Sound*, which is about half-way between the mouth of the Kennebec and Portland, there is a *stone column*, erected as a land-mark for vessels running into, or passing, either Harpswell or Broad Sound. It is also a conspicuous mark, when standing in from sea, in any direction between Cape Elizabeth and Cape Small Point. The islet on which it stands is one quarter of a mile long, without trees, and elevated 40 feet above the level of the sea. The column, which is placed near its centre, is 50 feet high, painted perpendicularly in black and white stripes, except near the top, which is black on each side. From off the column the course up Harpswell Sound is N.E. ½ N.

From the column Cape Small Point bears E. by S. 8½ miles; Turnip Isle, E. ¼ N. 1¼ mile; the reef called Drunker's Ledge S. ¼ W. to S. ½ W. 1¼ mile; the Half-way Rock

* The N.E. light bears from the neighbouring shoals, &c. as follows. *From* Alden's Rock, N.W. by W. 2¾ miles; from the Hue and Cry, N.W. ¼ N., 3¾ miles; from Taylor's Reef, N.N.W. ¼ W., one mile and a quarter; from Broad Cove Rock, S.S.W. ½ W., one mile and a quarter; from the outer point of Watch Ledge, N.E. ¼ N., two miles; and, from the eastern side of Richmond Island N.E., 2½ miles.—*(Official Notice.)*

S. by W. ¼ W. 3½ miles; the Outer Green Island S.W. by W. 5¼ miles; and Cape Elizabeth S.W. ¼ W. 11½ miles.

PORTLAND.—At N. 1° E. 4 miles from Cape Elizabeth, is a *Lighthouse* on Portland Point, built of stone, and the total height of which is 85 feet above the sea. Its light is *fixed*. The sound or harbour of Portland is buoyed, and the following directions are to be observed when sailing in. *(See the particular chart of the Harbour.)*

In coming from the south-westward, when within half a mile of Cape Elizabeth, the *red buoy on Broad Cove Rock* may be seen. This buoy bears N.N.E. from the pitch of the cape, distant one mile and a half, and lies in 24 feet of water. When advanced to it, leave it to the larboard, at half a cable's length, and steer N. by E. ¼ E. one mile, which will carry you up to the *white buoy* on *Trundy's Reef*, lying in 16 feet of water: give this the same berth as the former. You may run N. by W. ½ W. 3 miles, for Portland lighthouse; and, when up with the point, upon which the lighthouse stands, give it a small berth, and steer N. by W. leaving *Bang's Island* on the starboard side, till you come to House Island, the S.W. point of which bears North from the lighthouse, distant nearly 2 miles. Before you are up with this island, the *black buoy* on *Spring Point Ledge* may be seen: it bears N.W. by W. from the S.W. part of House Island, distant half a mile, and lies in 14 feet of water. When up with this buoy, you open the town; and giving it a small berth, you may haul up N.W. for the *white buoy* on *Stanford's Ledge*: the latter lies also in 14 feet of water, and is one mile distant from Spring Point Ledge Buoy. Giving the white buoy a small berth, you may keep midway up the river, and safely anchor off the town, at pleasure.

It is to be observed that, all the buoys above mentioned are to be left on the larboard hand when coming in. The depths above mentioned are at low water. Besides the above, there are also two small buoys lying upon two ledges in *White Head Passage*, at the N.E. part of Bang's Island: this passage is narrow, and seldom used by large vessels. By keeping midway between the two buoys, the *red* on the starboard, and the *white* on the larboard, when going in, you will not have less than 5 fathoms of water. After passing the buoys, keep midway in the passage, and run to the distance of a mile, which will carry you into *Ship Channel*, the same as if you had passed the lighthouse.

Cape Elizabeth is 4½ miles south of *Bang's Island*, and the ledge called the *Ten-foot Ledge*, or *Alden's Rock*, bears S.E. by E. 2⅞ miles from the cape, and about 7 miles S.S.E. ½ E. from the lighthouse. It has only 9 or 10 feet of water over it; and, in rough weather, the sea breaks on it.

On the fort-hill of Portland there is an observatory, from which, by means of a telescope, vessels approaching the coast, may be discovered at the distance of 15 leagues. Their colours, or private signals, can be distinguished at 8 leagues, if the weather be clear, and the colours hoisted or suspended in such a manner as to present them fair to the observatory. "Should any need assistance, and will set their ensign over their private signals, their situation may be made known."

The observatory is on an eminence, 141 feet above high water-mark; the building is 82 feet high, painted red, and the telescope is placed near the top. It bears N.N.W. ¼ W. about 4 miles from Portland lighthouse; and these, in a line, are a good mark to clear Alden's Rock, at the distance of nearly three-quarters of a mile to the eastward.

The various and intricate channels of Casco Bay and Quaheag Bay, between *Portland* and *Kennebec River*, including *Hussey's Sound*, *New Meadow's River*, &c., are too devious and too dangerous to be attempted without a pilot. The same remark applies to all this navigation which we have made upon *George's River*, &c. in page 46.

CAPE ELIZABETH TO CAPE ANNE.

From Cape Elizabeth to Wood Island, on the south side of Saco Bay, the course and distance are about S.W. 8½ miles; and thence to Cape Porpoise, S.W. 9 miles. The harbours formed by Wood Island and Cape Porpoise are to be attempted only with a pilot. The island is high, woody, and even: on it is a lighthouse, which may be known by its having a *revolving* light. The latter is 45 feet above the sea, and may be seen 7 leagues off. When, however, it is first made, at this distance, the eclipse, in each revolution, will be total; and is thus repeated until within the distance of 7 or 6 miles

miles, when the light will not wholly disappear. In the revolutions, the greatest power of light is to the least as twenty-four to one.

The Course and Distance from Cape Porpoise to *Cape Neddock* are S.W. ½ S. 12½ miles; between these points are the Bay and Town of WELLS; and inland, between Wells and Cape Neddock, *Agamenticus Hills* may be seen. At three-quarters of a mile to the northward of Cape Neddock, is the *Cape Harbour*, which is a very small one.

The WHITE HILLS.—The White Hills are, as represented on the chart, an important land-mark to those approaching these coasts, as they may be seen many leagues off at sea, like a bright cloud above the horizon, and when no other land is in sight. They are not only the highest lands in New Hampshire, but the highest in the United States.* In Holland's Survey of this State, the centre of the hills is represented in latitude 44° 10′ 40″, longitude 71° 10′ 30″, and the range extends true North and South, about 14 miles. From Portland the centre bears N.W. about 19 leagues, and from Wood Island N.W. by N. (by compass) at nearly the same distance.

These hills have been seen in latitude 43° 10′, at nearly 15 leagues from Cape Elizabeth, where bottom was found at 80 fathoms, muddy ground. If from this spot you steer W.N.W. you will, in that direction, make *Bonabeag* or *Wells Hills*, and will also descry *Agamenticus Hills*, more to the southward, within *Bald Head*. The latter, at 6 or 7 leagues off, appear to be three in number, the smallest to the eastward.

BOON ISLAND, &c.—It is proper to remind those coming from the eastward, that *Cashe's Ledge*, hereafter described, lies in latitude 43° 1′, and longitude 69° 6′, or thereabout; and that the Boon Island Ledges lie in 43° 6′ and 43° 7′, at 2½ leagues from the main.

In the Offing of the Coasts of New Hampshire and Massachusets, where there are 70 and 75 fathoms of water, muddy bottom, a strong *Current* is commonly found, setting to the S.W.

BOON ISLAND is a small island, nearly surrounded by rocks, which lies 5½ miles S.E. from Cape Neddock, and 10 miles E. by N. from the entrance of *Portsmouth Harbour*. It has now a *lighthouse*, which is built on the western part, where a monument or beacon formerly stood. The edifice is of stone, and two buildings are erected near it, the one for a dwelling, and the other for an oil-house. The light, which is fixed, is 32 feet above the level of the sea, and may be seen from the distance of 6 leagues. A ledge of rocks lie at a mile north from the island, of which, beware. There is also a reef, bearing E.S.E. one league from the island, over which there are only 4 feet at low water, and from which Agamenticus Hills bear N.W. ¼ N. at the distance of about 5 leagues.

PORTSMOUTH HARBOUR, the chief port of New Hampshire, is also the boundary of the State of Maine. Its entrance, in latitude 43° 3′, and longitude 70° 40′, is formed on the west by an island named *Newcastle Island*, and on the east by the main land terminating in *Garish's Point*. [*See the Harbour Plan on the Charts.*] A shelf stretches out and around Garish's Point to the distance of a mile, and has on its edge two islets named *Wood Isle* and *White Isle;* these are connected by a reef, covered at half-tide, and called the *Whale's Back*. On the N.E. point of Newcastle Island a *fixed* light is exhibited at 85 feet above the sea, and it is intended to have a light on the Whale's Back, to the S.S.E. of Wood Isle, which may probably be completed before this work is published.

Off the entrance of Portsmouth Harbour, at three miles south from the lighthouse on Newcastle Island, and one mile from the nearest shore, is a small reef, of 2 and 3 fathoms, called the *Gun-boat Shoal:* and, at five miles S.E. by S. is the groupe of islets and rocks called the ISLES of SHOALS, which now have a good lighthouse.

The ISLES of SHOALS, with the reefs about them, occupy an extent of 3 miles from N.N.E. to S.S.W. There are seven isles, the names of which, from North to South, are, Duck's Isle, Hog, Smutty Nose, Cedar, Star, Londoner's, and White, Islands. On

* The summit of Mount Washington, the highest of the White Hills, in Coos County, New Hampshire, has been lately given as 6234 feet in height; and the inferior peaks as varying from 5238 to 4356 feet.

the

the south point of the last is the lighthouse, the light of which is elevated 90 feet above the level of the sea; the lantern contains 15 patent lamps, with reflectors, on a revolving triangle, which will make one complete revolution in three minutes and a half; exhibiting on one side a bright *red* light, on another side a *blue*, and, on the other side, the natural colour of the light.

Each light may be distinctly seen, for about 50 seconds, at the distance of nine miles; the light will be wholly eclipsed, for about 10 seconds, between each colour; within that distance the light will not entirely disappear in clear weather; but, taking the medium, the greatest power of light will be to the least as 40 to 1. The bright, or natural, light will be first discovered in clear weather, at the distance of about seven leagues; and, on approaching, the red and blue in succession. The bright light may be seen two or three miles farther than the red, and the red about the same distance farther than the blue.

A bell of 800 lb. weight is suspended in the tower of the lighthouse, which will be kept tolling by machinery at the rate of about ten strokes in a minute, by night and day, whenever, from fog, or any other cause, the light or lighthouse cannot be seen at least four miles distant: at which distance, it is calculated, the bell may be heard in moderate weather.

White Island is a small rocky spot, bold-to, and clear on the S.E. only, near which is a depth of 20 fathoms.

Londoner's Island lies nearly half a mile to the northward of White Island; it is less than a quarter of a mile in extent; high at each end; but at high tides the middle is sometimes covered. This isle is nearly surrounded with rocks, some of which are always above water.

Star Island, distinguished by a conspicuous meeting-house, near the centre of it, lies about one-third of a mile to the eastward of the *Londoner*, and is a quarter of a mile in length from N.W. to S.E. The north end is covered with buildings. The meeting-house stands on an eminence, a little to the northward of the middle of the island, fronting the west: the roof of this building is only 12 feet high; but thence to the top of the steeple, which stands on the middle of it, is 30 feet more; and the whole height from the surface of the water, is about 65 feet. Being painted white, it may be seen from a distance of 8 or 9 leagues. It bears from Thatcher's Island Lights, Cape Anne, (hereafter noticed,) N. ¼ E. distant 7 leagues; from Newbury Port Lighthouse, N.E. ¼ E. distant 4½ leagues; from Portsmouth Lighthouse, S.S.E. ½ E. 7¼ miles; from the western *Agamenticus Hill*, S. ¼ E.; from Boon Island Lighthouse, S.W. ½ S. 3½ leagues; and from Boon Island Ledge, which lies one league E.S.E. from Boon Island, S.W. by W. 3¾ leagues. Off the south end of this island, at about three-quarters of a mile S.S.E. ½ E., lies a rock, called *Anderson's Rock*, which is uncovered at half-tide, and should, therefore, have a good berth when passing. There is also a rock, between this island and Londoner's Island, bearing from the Meeting-house N.W. by W. ½ W. distant one-third of a mile.

Cedar Isle is an islet which lies to the eastward of Star Island, at the distance of a cable's length. Half a mile from the S.E. end of this isle is a reef, uncovered at half-tide, which bears E.S.E. ½ E. from the Meeting-house on Star Island.

Smutty Nose Island is nearly a mile in length from east to west, and half a cable's length broad. It may be known by a windmill on its north side. At the west end is a harbour, called *Haley's Cove*, where fifteen or twenty small vessels may lie safely in all winds. There are several buildings near this place. Between the island and Hog Island, which lies to the northward, there is sufficient depth of water for any vessel, by keeping nearly in mid-channel; but there are reefs on each side. The east end of Smutty Nose Island bears from the Meeting-house E.N.E. nearly half a mile.

Duck Island is the northernmost of the Isles of Shoals. It is low and rocky. Some parts are covered at high water, with rocks projecting in every direction, and to the distance of half a mile. It is the most dangerous of the Isles of Shoals, and must be cautiously avoided. Its west end bears from the Meeting-house nearly N. by E. ¾ E. a mile and three-quarters distant.

In sailing from the S.W. for Portsmouth, having made the Lighthouses of Cape Anne, in latitude 42° 37′, and being to the eastward of the *Salvages*, which lie to the northward of that cape, bring the Salvages to bear S. by E. and steer N. by W. or N. ¼ W., on which course you will make the Isles of Shoals, and may thence take a new departure.

departure. Bring the Lighthouse on White Isle S.S.E., and then run N.N.W.; but should the wind come to the northward, and you are obliged to turn into Portsmouth, take care to avoid the *Gun-boat Reef*, and stand to the westward no farther than to bring Portsmouth Light to bear N. by W., until you arrive within *Odiornes' Point*, on the west side of the entrance; and, when standing to the eastward, you should tack so soon as the lighthouse bears N.N.W. until you get within Wood Island, on the East side. Be cautious of approaching Odiornes' Point when coming in from the south-westward, as sunken rocks lie off it to more than half a mile, which do not appear with off-shore winds. In standing to the eastward, be likewise cautious of *Kitt's Rocks* and the *Whale's Back*, which lie to the southward, within three-quarters of a mile from Wood Island, and are covered at half-tide.

At the Entrance of the Harbour the Tide flows, on full and change days, at XI¼ h. Springs rise from 10 to 12 feet; neaps 6 to 7 feet.

NEWBURY PORT, &c.—The Entrance of Newbury Port, or Newbury Harbour, is 5 leagues S.S.W. from that of Portsmouth, in latitude 42° 48′. The entrance is distinguished by two lighthouses on the south side, which have *fixed* lights, at 37 feet above the level of the sea, and stand on the north end of the narrow isle called *Plum Island*,* at one-third of a mile from each other. If advancing toward this place from Cape

* *Plum Island* is situated between the mouth of *Merrimack River*, on the north, and *Ipswich Bay*, on the south, and is separated from the main land by a narrow sound. Its length is about 8½ miles, and its width, from the sea to the main, not more than 500 paces. On the north end of the island are two lighthouses, which are constantly lighted at night, and so constructed as to be easily moved; a circumstance requisite from the frequent shifting of the bar at the mouth of *Newbury Port Harbour*. This bar has probably been formed by the current of the river, in its progress out, meeting the drift of the sea and opposing winds, and by that means forming a bank of loose sand, which the strength of the tide is insufficient to force out. It extends across from *Plum Island*, about a mile below the lights, to *Salisbury Beach*. The channel over it is extremely narrow, and terminated on each side by very dangerous shoals; that on the north, called the *North Breaker*, and that on the south, the *South Breaker*. The lighthouses are always so situated as to be brought in a range by the mariner coming over the bar; and, as by the violence of winds or tides, the bar shifts, the lighthouses are shifted to conform to it. By keeping the lights in one, vessels may, by day or night, come in with safety, and find good anchorage, in 4 or 5 fathoms of water, abreast, or between, the two lights.

That part of the island bounding on the sea, and extending above half its width, consists entirely of yellow sand, perfectly smooth on the beach, but, farther from the sea, driven by the wind into hillocks, or heaps of fantastic forms, and preserved in that shape by the successive growth of grass and shrubs. On the back part of the island, where it is washed by the sound, is an extent of salt-marsh, bounding its whole length. The products of *Plum Island* are scarcely worthy remark: beach-grass is the principal, and is used only for manufacturing brooms. A species of plum, from which the island derives its name, grows here in tolerable abundance. It is produced on low running shrubs, on the summit and sides of the sand-hillocks; is pleasant to the taste, and, generally in its season, is an article for the market. There is likewise the beach-pea, of which little or no use has ever been made; and, indeed, it is not found in sufficient plenty to become much more than an article of curiosity. At the southernmost end of the island there are several houses, with families, and a considerable spot of land in good cultivation. To the northward of this there is a grove of pine-trees, of 1½ mile in extent.

The Marine Society of *Newbury Port* erected, some years since, at their own expense, several huts, at proper distances, from each other and from the shore, and supplied them with fire-works, fuel, straw, &c.; but, owing to the strong winds driving the sand from their foundations, and the inhuman conduct of the people who visited the island in summer, these huts were in a few years totally destroyed. The misfortunes attending this generous and humane attempt, in favour of the shipwrecked mariner, deterred the Marine Society, as well as other bodies and individuals, from a like benevolent attempt, until the establishment of the Merrimack Humane Society, in 1802. Conceiving it absolutely necessary that some relief should be afforded the unfortunate sufferer on so desolate a spot, and in the most inclement season of the year, the society voted to build three huts on the island, and have carried their generous resolutions into full effect. The exertions of this benevolent institution will be, in future, to preserve these huts in repair, and in perfect supply of materials for fire, and other necessaries for the support and preservation of life. Many, no doubt, will owe their lives to the humanity of this design, and with grateful feelings contribute themselves to the preservation of others. The expense and trouble will be trivial in comparison with the noble purposes it may answer; and the hope of its answering these purposes will be alone a sufficient remuneration to the generous projectors.

From the report of a committee, appointed by the society, we have the following description of the huts, and directions to the mariner to find them:

The house for the keeper of the lights, erected by the United States, is about twenty rods south from the lighthouses.

About 2500 paces, or 1½ mile south, from this house and the lights, on the inside of the island, is the

Cape Anne, and being at about two miles to the northward of the Salvages, before mentioned, bring the latter to bear S.E. and steer N.W. 4½ leagues, which will lead to Newbury Bar.

If you advance no farther westward than for the lights on Plum Island to bear S.W., no danger is to be apprehended from either of the rocks above mentioned; but that course to the bar would lead to the north breaker: you must, therefore, bring the lights to bear W. by S., and anchor in 11 or 12 fathoms of water, should the tide not permit you to sail in. No vessel going in should approach the south breaker nearer than in 7 fathoms; or nearer the north breaker, in coming from the eastward, than 9 fathoms. Pilots are always ready when the weather will permit them to go out; but, if they cannot get out, you must keep the two lights in a line, and run for them until within a cable's length of the eastern light, when you must haul to the westward, and anchor between the two lights, in 4 fathoms;* or you may bring the western lighthouse S.E. by S., and run N.W. by N. for Salisbury Point:† but, so soon as you make that point,

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the first hut, to which the mariner, in day-light, may be directed by a beacon, about 300 paces to the East, with a hand pointing to the hut.

2900 Paces, or about 1¾ mile south, from this is the second hut, with a similar beacon, about 400 paces S.E., pointing to it.

1700 Paces, or about one mile, south from this, is a third, with a beacon, bearing East, 500 paces distant.

5000 Paces, or about three miles, south of this, is a house, occupied by Mr. Spiller and family, which is about one mile from the south end of the island; and about West one mile from the south end of the island are two other houses, with families.

These huts, together with the other houses mentioned, form a chain from one extremity of the island to the other. The unfortunate mariner, whose fate may wreck him on this shore, can, by noticing the point of compass from which the wind blows at the time of his being wrecked, be governed in his course across the island, where he will find himself under the lee of the higher land, and protected in some measure from the violence of the tempest. By keeping along the margin of the island, where the travelling is good, and before coming quite to the marsh, either north or south, he will be certain of meeting with one of these huts or houses, where he may find temporary relief. Further assistance will be afforded him immediately after the shipwreck is known.

Near the south end of the island are some rocks. Those who are compelled, if they can choose their place to go on shore, would do well to avoid them, by striking the beach more northerly.

It rarely happens that any life is lost on this beach, in attempting to escape from the wreck, when the crew remain on board till low tide. Unless the vessel is in imminent danger of going to pieces immediately, the seamen should never take to their boat.

* A vessel that draws ten feet of water may come in at two-thirds flood. They should always observe to keep to the windward of the bar, unless the wind should be fair. If the sea is so great as to prevent the pilot's getting over, a signal will be made by him, when you must run direct for his boat, keeping the lights in range, which will carry you safe over.

In the year 1827 it was stated that, for several months previous, the water had been gradually deepening upon the Bar, and that they then had upwards of nine feet at low tide, and upwards of twenty feet at high water, spring-tides; but frequent changes may be expected, and caution is therefore requisite.

† In a course nearly North from the lighthouses on *Plum Island*, and about half a mile distant, across the mouth of *Merrimack River*, is the southern extremity of *Salisbury Beach*, called *Salisbury Point*. From this point a sand-beach extends on the verge of the ocean, without an inlet or interruption of any consequence, until it reaches *Hampton River*. This beach is connected with the main land by a salt-marsh, of considerable extent, intersected by a variety of small rivulets and creeks, which render it impossible for a shipwrecked mariner to reach the inhabited parts of *Salisbury*. Here, too, the hapless seaman is sometimes destined to suffer the misfortunes of shipwreck, and to reach a desolate and inhospitable shore, only to aggravate the horrors of his death. If he can attain the first and wished-for object, in evading the jaws of the angry ocean, he yet finds himself a solitary wanderer on the coast, without shelter, and without sustenance; and, in his fruitless search for them, must inevitably perish. As the N.E. storms are generally most fatal to vessels on this part of the coast, *Salisbury Beach* is not so often a place of shipwreck as *Plum Island*. But, to guard against a possibility of accident, which must sometimes happen to the unskilful or inexperienced navigator, the Marine Society erected a hut, similar to those on *Plum Island*. Here they deposited every thing necessary for the relief of such as might need it, and were at the pains and expense frequently to inspect it, and renew their generosity by replenishing it: but this has shared the same fate with those on *Plum Island*; not so much, however, from the insufficiency of its foundation, or the violence of the winds, as from the wantonness of individuals and companies, who frequent this spot, in the warm season, on parties of pleasure. The Merrimack Humane Society have extended their benevolent views to this part of the coast, and have erected a hut about three-quarters of a mile north from *Black Rocks*, so called, and about 150 paces from the sea-shore. This hut will be maintained in commodious repair, and provided with every thing suitable for those who may be so unfortunate as to need its shelter. Others, on the same coast, will be erected as speedily as the funds of the society, and the charity of individuals, will render it possible, and will be conveniently furnished and provided for the same laudable purpose.

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you must haul up N.W., which will carry you clear of *Badger's* Black Rocks and the Hump Sands.

Across the channel, from the Hump Sands to Black Rock Creek, lie seven or eight piers, on which are from 7 to 2½ feet at low water: they were sunk in the year 1776, and still remain. The mark to pass between them is, to bring the beacon at the west end of the town over the south corner of the North Meeting-house.

The *Hump Sands* lie S.W. from Salisbury Point, which renders the channel very narrow and difficult to strangers. The *Badger Rocks* bear N.W. ½ N. from the light-houses, distant half a mile: they are covered at two-thirds flood, and are to be left on the starboard hand, when going in. The *Black Rocks*, which are always dry, lie three-quarters of a mile N.W. from the lighthouses: these, also, must be left on the starboard hand. The *Half-tide Rocks* bear W. by S. ½ S. from the Black Rocks, at the distance of 1½ mile; they are uncovered at half-tide, and have a buoy on them, which is to be left on the larboard side. Besides these there are the *North Rocks*, which are seen only at very low tides, and which bear W. by S. from the Black Rocks, from which they are 1½ mile distant; there is a buoy on them, which is to be left on the starboard hand; the channel lying between these and the Half-tide Rocks. When you pass the Black Rocks, a W. by S. ½ S. course will bring you into the channel-way and good anchorage; and, even in night or dark weather, when you judge yourself at about half a mile from the Black Rocks, you may anchor in safety.

It is always dangerous to run for this port in a gale of easterly wind.

The signals for vessels, when in sight, and supposed to be bound for Newbury Port, at the time when the sea is so great on the bar that pilots cannot get out to their assistance, are as follow:

When a vessel comes into the bay, and cannot get over the bar at *high water*, owing to insufficiency of the tide, a *red square flag* will be hoisted up, with a pendant under it; and, so soon as these signals are seen from the vessel in the bay, she must keep off, and try some other port.

When the usual signals for vessels are kept up, the vessel must lay off and on, without the bar, keeping to windward until signals be made for her to come in; and when it is a suitable time to come over the bar, a *red square flag will be hoisted half-mast*; she may then come in, keeping the lights in a range or in a line.

When a *pendant* is hoisted half-mast, the vessel may come in, keeping the lights a little open to the northward.

When a *blue burgee* is hoisted half-mast, the vessel may come in, keeping the lights a little open to the southward.

When a vessel is seen in the bay, and does not get in before night comes on, the following lights will be made:

For a vessel to keep off, and not attempt to come in over the bar, during the night, a lantern will be hoisted to the top of the flag-staff.

When there is a proper time *for a vessel to come in* over the bar, during the night, two lanterns will be hoisted, one at the top of the flag-staff, and the other half-mast high. The vessel must then lay off and on at the bar until a light is made in the eastern light-house, at a window about 8 feet below the lantern. The vessel may then come over the bar, keeping the lights in a line; and, when she gets abreast of the upper light, there is good anchorage.

The signal *for vessels in distress* is a white square flag, with a large black ball in the centre, hoisted half-mast high.

HAMPTON HARBOUR lies about 5 miles N. ½ E. from the entrance of Newbury Port; between, at the distance of 3 miles N. by E. ½ E. from the lights on Plum Island, lies a dangerous rock, having only 3½ feet of water over it; and, at some distance to the eastward of Hampton Harbour are several sunken rocks.

ANNIS SQUAM, or SQUAM HARBOUR, in the south part of Ipswich Bay, is nearly 4 leagues S.S.E. from Newbury Port. It has a lighthouse which stands on *Wigwam Point*, the eastern side of the entrance. It is a wooden building, of an octagonal form, about 40 feet high, and about 50 feet above the surface of the water at common high tides. It is painted white, and may be known by its inland situation, and being lower than any other lighthouse hereabout. The Light is *fixed*.

Squam affords a safe harbour to those who know the bar, and is of great importance to those who get into Ipswich Bay during an easterly gale. On the bar are 16 or 17 feet at high water.

The bar of this harbour bears from Halbert Point (the N.E. point of Cape Anne) about S.W. by W. 3½ miles. In running from Halbert Point, be cautious of *Plum Cove Ledge*, which shews itself until nearly high water, and bears from Squam light N.N.E. a little northerly, ~~about five-eighths of a mile~~. Passing this ledge, you leave Hodgkins' Cove, which is deep, and a long point of land called Davis's Neck, on your larboard hand. When up with this neck, haul S.W. or S.W. by W. for Squam Bar. In sailing into this harbour, bring the light to bear due South, when at the distance of a mile from it, and run directly for it, leaving *Haradan's Rock*, ~~which lies N.E. by E. ¾ E. from the light, distance three-eighths of a mile~~, on your larboard hand. Continue your course till within fifty yards of the light, then haul up S.S.W. for the Bar Rock, leaving the lighthouse on the larboard. The bar, which runs nearly N.E. and S.W., leaves the river about 90 fathoms broad opposite the light on the starboard. In running up, as here directed, you will leave the *Lobster Rocks* (which lie 200 yards S. by W. from the lighthouse, and dry at low water) on the larboard hand. When up with the Bar Rocks, which lie on the starboard hand, and are dry till nearly high water, steer S. by E. ¾ E. until you open the houses, and you may anchor in from 3½ to 5 fathoms, clear sandy bottom: or run your vessel on shore, on the starboard side, should you happen to be without anchors and cables.

When the weather is so boisterous that boats cannot get off, a flag is hoisted on shore, near the lighthouse, so soon as there is a sufficient depth for vessels upon the bar, which may then run as above directed.

The *Salvages*, before-mentioned, bear from Halbert Point E.S.E. 2½ miles distant; and from Cape Anne lighthouses, which stand on Thatcher's Island, N. by E. 3 miles. Between them and Cape Anne there is a passage.

CAPE SABLE *of* NOVA-SCOTIA, *to* CAPE COD, PLYMOUTH, BOSTON, *&c.*

From Cape Sable to Cape Cod, the course and distance are W. by S. [*W.S.W.*] about 70 leagues: in steering this course, you will pass about 12 leagues to the southward of *Cashe's Ledge*, of which the following is a description, communicated by the Master of His Majesty's sloop Beaver.

CASHE'S LEDGE.—"I took my departure from Thatcher's Island to the eastward of Cape Anne. The island bore North from me, distant 3 miles. From this bearing I steered E. ¼ N., with a fair wind, 65 miles, and fell in with the bank where Cashe's Ledge is, about 2 leagues to the northward of the shoal, in 60 fathoms of water; the soundings were a hard black clay. This bank extends from north to south 7 leagues, and from east to west 2 leagues. In the middle of the bank is the shoal mentioned: its length and breadth are about half a mile. It is rocky, and its soundings very irregular, having from 10 to 4 fathoms of water in the length of a boat. You will have 17 fathoms of water within a cable's length of it, deepening, as you stand from it, to 90 fathoms. As you approach the bank, you sound in from 60 to 35 fathoms, brown sand, with black stones and broken shells; then, in 30 fathoms, it grows rocky. The current on the ledge is exceedingly rapid and unaccountable. If the wind blows strongly, any vessel would founder, although she should not strike on it. The situation of the ledge, by four days' good observation, is latitude 43° 1′, longitude 69° 6′. On the shoalest part are only 12 feet at low water."

It has since been said, by Mr. Backhouse, master of His Majesty's ship Argonaut, that Cashe's Bank extends North and South 7 leagues; the shoalest part being near the centre, extending a quarter of a mile each way. The ledge, he observes, bears from Cape Anne, E. ½ N. 24 leagues, the shoalest part being in the latitude above-mentioned, "You will have," he adds, "on this part from 10 to 4 fathoms, very irregular soundings, all rocky bottom. The current shifts all round the compass every hour, and runs at the rate of two miles an hour."

GEORGE'S BANK.—The shoal-grounds upon this bank have heretofore been the objects of much discussion, without any satisfactory result. Having been imperfectly known,

known, they have been described erroneously, both in charts and books. The following description is, therefore, particularly valuable. It is the copy of a Report, relative to the survey of these shoals, made in the United States' schooner *Science*, and the sloop *Orbit*, in 1821. This survey was made, in co-operation with the *Orbit*, then employed at his expense, on the request of Mr. Edm. Blunt, of New York: and was performed jointly by Mr. Felch, U. S. Navy, and Edm. Blunt, junior.

"There are properly four shoals on George's Bank; the whole of them included between latitude 41° 34′ N. and 41° 53′ 30″ N., and longitude 67° 18′ W. and 67° 59′ W. Between them there are from 15 to 35 fathoms of water.

"The largest, and on which is the greatest danger, is the most southerly and westerly. It is somewhat triangular, with a long and narrow spit, making out from the S.E. angle. The S.E. point is in latitude 41° 34′, and longitude 67° 40′. The west point is in latitude 41° 42′, and longitude 67° 59′. The eastern side of this shoal, although somewhat irregular, runs nearly S.S.E. and N.N.W.,* having on it from 3 feet to 9 fathoms at common low water. It is composed of a great number of sand-spits, very narrow, so that the width of a narrow vessel will make several fathoms difference in the depth of water. The general range of the spits is from S.E. to N.W. As there are no rocks, they are consequently liable to change, in some measure, their position and ranges. On the eastern edge, even in calm weather, unless it be high or low water, the tides run with great rapidity, and form considerable breakers, when setting to the westward. This is accounted for, by a knowledge of the fact, that directly on the edge of this shoal there is from 12 to 16 fathoms of water, so that the edge forms a species of dam, stopping the force of the flood-tide, and over which the ebb falls.

"When there was considerable wind, we observed that the breakers were higher within the edge, to the westward, than on the edge; and I have no doubt that the water there was still shoaler, and that we should have seen the sand, had it not been for heavy sea. The breakers were such, unless it were entirely calm, that it was impossible to go among them with boats; nor was it considered safe to attempt it with the vessels. For besides the danger of striking on the hard sand-spits, the vessels would have been liable to have been filled by the breakers. Even on the eastern edge, and at nearly slack water, the vessels were at times nearly covered with them. It was not thought necessary to attempt it, as the object of the survey, to ascertain if there was danger on the shoals, and the situations and extent of them, could be accomplished without the risk.

"Had not the sea been very smooth, and at high water, we should not have been able to have gotten on where we found 3 feet, reducing it to low water. The prevailing wind was to the eastward; and I have no doubt but that this place would have been bare, with any continuance of an off-shore wind.†

"I think there are no rocks about the shoals. We had one cast on the S.W. side, which indicated rocky bottom, in 15 fathoms; but I believe it to have been some sharp stone that the lead struck on, although I have marked it according to the appearance on the Chart.

"The centre of the northern shoal is in latitude 41° 53′ 30″ and longitude 67° 43′. It extends east and west about four miles. The shoalest part having 6 fathoms, is very narrow and composed of hard sand. But there is not more than 12 fathoms of water for three miles south of the above latitude. On the north side, at two cables' length from the shoal, the sloop dropped into 33 fathoms. The breakers on this shoal are very heavy, and when there should be a sufficient sea to endanger a vessel, they might be seen some miles, and heard at a very considerable distance; and, as the shoalest part is not more than a cable's length inside, and no danger near it, a vessel might avoid it.

"To the eastward of the last-mentioned shoal, in latitude 41° 51′, and longitude 67° 26′, is another small shoal, with 8 fathoms of water, having, however, considerable

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* This is the *Malabar Shoal* of the old Charts.

† In some remarks which he has made on the "Shoal Ground of St. George's Bank, Mr. Lockwood says, The pilot of the Bulwark declared, in the presence of Captain Milne, myself, and others, that he had landed on the shoal part of George's Bank, and that he believed it dried for at least six miles, and was composed of fine sand. Many of the Cape Cod fishermen assert that they have seen the gulls sitting on it; while others positively insist that the only danger exists in the heavy and cross sea, caused by the current running forcibly over the uneven ground; but that, upon large patches of sea-weed, the gulls are often seen."

breakers.

breakers. There are but 17 fathoms for three miles north of it. But very near to the east of it, are 31 fathoms, and from 20 to 30 fathoms to the south and west.

"The centre of the East Shoal is in latitude 41° 47′, and longitude 67° 19′. It is about two miles long from east to west, and has 7 fathoms of water. To the south there are but 17 fathoms for two miles. In other directions there are from 20 to 30 fathoms.

"The above-described shoals, I am confident, are all which are on George's Bank. Their positions and sizes may be relied on, as well as the places of the soundings which I have laid down in the Chart. They were ascertained by a vast number of celestial observations, taken with good and well-adjusted instruments, on board the two vessels, and very carefully and faithfully calculated. The rates of the chronometers were found by a transit instrument previously to sailing from Boston, and after our return; and all the observations re-calculated for the small variation which appeared.

"At anchor, in different places, and on different days we determined the set and strength of the tides, and, as nearly as possible, their rise and fall. The rise of them is from one to one and a half fathom. They set round the compass every tide, setting S.E. nearly at full moon, and running from one to four knots per hour, at a mile's distance from the breakers. The mean rate, however, is materially varied by the winds.

"They set strongest at W.S.W. and E.N.E., and which is, undoubtedly, the strength of the flood and ebb. From these causes and variety in the tides, arises a principal danger in approaching the shoals. When under weigh about the shoals, in a few hours' time, we found ourselves drifted far out of our reckoning; and to ascertain our situations when both vessels were under way, we took continued observations for the longitude by the chronometers, and at the same time double altitudes for the latitudes; which latter were calculated by Brosius' new and certain method. By allowing for the set of tides, as ascertained at anchor, the observations and reckonings agreed very nearly; so that the latitude and longitude of every sounding placed on the Chart may be considered as certain.

"Should any vessel fall in with the shoals, a knowledge of the course and strength of the tides would be of the greatest importance. And they can be calculated for any day and hour by the preceding facts.

"In going from Cape Cod to the shoals, at five leagues from the light, there are 86 fathoms, muddy bottom. The water gradually deepens to 133 fathoms, and then gradually decreases towards the shoals. In latitude 41° 51′, and longitude 68° 11′, there are 90 fathoms. In latitude 41° 50′, and longitude 68° 3′, there are 49 fathoms, sand and gravel, on the western edge of the bank. The water then shoalens fast. To the northward of the shoal, in latitude 41° 59′, and longitude 67° 52′, on the south side of the north channel, there are 60 fathoms, soft mud. In latitude 42° 12′, and longitude 67° 51′, there are 102 fathoms. In latitude 42° 10′, and longitude 67° 18′, there is no bottom at 175 fathoms. To the eastward we did not ascertain the extent of the bank. In two miles southward of the S.E. point of the shoals, there are 20 to 26 fathoms of water, which soundings continue for at least twenty miles to the southward and westward.

"The bottom on the bank, so far as we ascertained it, is of such a narrow character, that it is difficult for a vessel to ascertain her situation by it. We often found a great variety of soundings in a very short distance; such as sands of various colours, and differently mixed, coarse and fine gravel, pebbles of various colours, stones, sponge, and shells. Of all these, except sand, I saved a number of specimens, with marks to note the places from whence they were taken.*

"Notwithstanding this variety, some general character of the soundings may be useful. To the westward of the shoals, and at some distance from them, the bottom is coarse sand and gravel, of all colours; to the N.W. a mixture of white, black, and yellow sand; to the North, black and white sand; to the N.E. chiefly gravel and pebbles; to the East, fine white and yellow sand; and in latitude 41° 57′ North, and longitude 66° 40′ West, some white moss; to the S.E. fine white and yellow sand; to the South, generally white sand. As the shoals are approached, in whatever direction, the

* "It may be worthy of remark that, at one cast of the lead, on examining the arming, I found one-third black sand, one-third white, and one-third green shells, in as distinct dimensions as they could have been drawn."

soundings become coarse, and are frequently mixed with shells of different kinds. Near the shoal, much of the bottom is pebbles; and to the east of the largest and dangerous shoal, there are stones of the size of hen's eggs, with moss and sponge on some of them. Near the S.E. point are 13 to 20 fathoms: a prevailing character of the soundings is green shells, and chiefly of the species usually called sea-eggs. If a vessel be far enough South to avoid danger, she will have no shells. The quality of the soundings, as far as we were able to survey the bank, will be best understood from the Chart, where they have been carefully rated.

"The time and weather prevented making a complete survey of all parts of the bank. And although we ascertained the boundaries of it to the westward and northward, I have not delineated it on the Chart, being unwilling to borrow any thing from charts which disagreed so essentially, and which we found very incorrect in the most material points. Of the shoals themselves, I do not believe a more perfect survey can be made; unless, in a calm time, the main shoal could be penetrated. This, however, does not seem to be an object, as no vessel would be safe in passing over it.

"The reports that rocks have been seen on the shoals are undoubtedly incorrect. Had there been any there, we could not have failed of discovering them. At the west part of the bank, in strong tide rips, we saw large quantities of kelp and sea-weed, which, at a distance, had the appearance of rocks; but, on sounding, we found good water, and a regular and clear bottom.

"It will be seen, by the bottom, that the holding ground is not good. But the vessels employed in the survey, by having a long scope of cable, rode out a considerable gale of wind, for twenty-two hours, on the east side of the main shoal, and to the windward of it. At this time the sea broke very high, in 10 fathoms of water.

Boston, Nov. 1, 1821. C. FELCH.

Mr. Backhouse says, "The S.E. part of George's Bank lies in latitude 41° North, and longitude 66° 30′ West from Greenwich. I found it so several times, in crossing from New York to Halifax. You will have, in a fairway, from 35 to 45 fathoms, fine sandy bottom. Should you fall off more to the eastward, you will deepen your water to 60 or 70 fathoms, coarse sand: a N.E. course thence will lead you in a fairway towards Shelburne lighthouse, on the Nova Scotia coast."

CAPE COD to PLYMOUTH.—Cape Cod is distinguished by the lighthouses described hereafter, and the course from the extremity of the cape to Plymouth Harbour is W. ¼ S. distant 6 leagues. This harbour may be known by a round hummock, lying on its northern side, called the *Gurnet*, upon which two lights are established; and on its southern side by a double high land, called the *Monument*. The Monument side is full of shoals and quicksands, which dry in several places; but, on the Gurnet, or north side, there is a fair channel, in which you may ride safely with any wind but an easterly one. But, should an easterly wind happen to blow so hard as to force you from your anchor, you must run farther up the harbour, and anchor within the sandy island called *Brown's Island*.

The Directions for Plymouth Harbour, as given by American pilots, are as follow:—

The harbour of Plymouth is capacious, but shallow; and is formed by a long and narrow neck of land, called *Salthouse Beach*, extending southerly from *Marshfield*, and terminating at the Gurnet Head; and by a smaller beach within, running in an opposite direction, and connected with the main land near Eel River, about three miles from the town. The lighthouses on the Gurnet are about 86 feet above the surface of the sea, 15 feet apart, containing *fixed* lights, and are so situated, that they cannot be brought in a line to the northward, unless to those on shore.* The lights are brilliant, and may be seen at 5 leagues off.

From these lights the high land of the Monument bears S. ¼ W. 3 miles; Monument

* But to the southward these lights may be brought in one, and lead clear of Brown's Island or Bank. On Salthouse Beach stands one of the huts erected by the Humane Society of Massachusets, for the reception of shipwrecked mariners. There is a breach in the inner beach, which exposes the shipping, even at the wharfs, during an easterly storm.—*Am. Coast Pilot.*

Point,

Point, S.S.E. two leagues; Saquash Head, W. ¼ S. three miles; the easternmost part of Brown's Island or Shoal, which dries S.S.W. one and one-third of a mile; and the Gurnet Rock, E. by S. ¾ S. one-third of a mile; on this rock are but 3 feet at low water, at which time all the soundings here mentioned were taken.

The *Gurnet* bears from the Race Point of Cape Cod W. ¼ S. about 6 leagues. In proceeding for Plymouth, so soon as you have shut in the sandy hill with the Gurnet Head, you will be clear of the Gurnet Rock; after which you must be cautious of hauling close to the head, as there are many sunken rocks at some distance from shore. When you have brought Saquash Head to bear W. by N., you may steer W. by S.; and, if bound to *Plymouth*, you must keep that course towards a large red cliff on the main, which is a very good mark for leading clear of *Dick's Flat*: you will then steer more southerly for *Beach Point*, or run up until you are abreast of *Saquash Head*, giving it a distance of one-quarter of a mile. Then steer W. by S. ½ S., which will carry you clear of Dick's Flat directly for Beach Point, keeping within 15 or 20 yards of the sandy point as you edge away to the southward, until you have shut in the lights, where you may anchor in 3 or 4 fathoms; but the channel is very narrow, having nothing but a flat all the way to Plymouth, except this small channel, which runs close to the neck of land, and in which you will have 4 or 5 fathoms close to the sandy point.

If bound into the Cow-Yard, steer as above directed, which will lead clear of Dick's Flat and the Muscle Bank; observing to keep the house on the Gurnet Head just open with Saquash Head, until you have opened the high pines with *Clark's Islands*; then you will be clear of the Muscle Bank, and may steer N.W. until you have 3 fathoms at low water.

In turning into Plymouth, you should not stand to the northward into less than 3 fathoms, as it runs flat a long way off from the Gurnet Head to Saquash; and off both the heads a point of rocks extend to a considerable distance from shore, many of which are nearly uncovered at low ebbs. There is shoal water also all the way from Saquash to the Muscle Bank; so that you should not stand into less depth than that above mentioned: and, in standing towards the sands to the southward, you should tack in 4 fathoms, as it is steep-to, and you may observe the rips, unless the water be very smooth. The shoal extends from abreast of the lights to Beach Point, and the greatest part of it is uncovered at low ebbs.

In coming from the southward of Plymouth Harbour, you must not open the northern light to the westward, but keep them in one, bearing N.N.W. ½ W., which will carry you into 5 fathoms, by the easternmost part of Brown's Island or Shoal, keeping that course until you are within half a mile of the Gurnet Head, or near, where you will have but 4 fathoms: Saquash Head will then bear W. by N. a little northerly, and the two outermost trees on the head be in one; when you may steer directly for them, until you bring the lighthouse to bear E.N.E., and the house on Saquash N.W., just open with the first sandy beach, where you may anchor in Saquash Road, in 4 fathoms, good clear bottom; but, if bound to Plymouth, or the Cow-Yard, you must steer as before directed.

Should you fall in to the southward of Brown's Island or Shoal, between them and the Monument land, where, in some places, you will find 20 fathoms, you must not attempt to run for the lights, until you have brought them on with each other, bearing N.N.W. ½ W.; for, if you do, you will run on Brown's Island or Shoal, as there is no passage even for a boat at low water.

In coming in from the northward, for Plymouth, you should not bring the lights more southerly than S. by W., as thus you will avoid the High Pine Ledge, which lies north 2½ or 3 miles from the Gurnet Head. The shoalest part of this ledge, which is uncovered at low ebbs, lies about 1½ mile from the shore, with the high pines in range with Captain's Hill, which will then bear W. by S. It extends N.N.E. and S.S.W. nearly a mile, and has 4 or 5 fathoms close to it, which deepens gradually as you run to the eastward from it, having 10 to 12 fathoms at the distance of a mile.

By night, with the lights bearing S. by W., proceed to the southward until they bear N.W. or N.W. by W., when you will be clear of the rock, and may steer up W. by S. until you have the lights bearing E.N.E., when it will be prudent to anchor until daylight.

The tides flow in Plymouth until nine o'cock, on the full and change.

Should you make the Gurnet lights in the night, during hard northerly or north-west winds, and cannot get into the harbour of Plymouth, you may run for that of Cape Cod, the

the point at the entrance of which bears from the Gurnet lights E. ¾ S. about 10 miles. It is bold-to, and, unless it be very dark, you may see the sandy hills before you can get on shore.

CAPE COD TO BOSTON.—From about a league off Cape Cod, your course to Boston lighthouse is N.W. by W. ½ W., and the distance 12 leagues. The lighthouse, which is 82 feet high, stands on a small island at the north side of the entrance of the channel. The *light*, which was formerly fixed, is now *revolving*, on the improved plan, at 82 feet above the level of the sea: it appears brilliant 40 seconds, and is obscured 20 seconds, alternately.* It may be seen 9 or 10 leagues off. At the distance of 7 or 8 leagues, the interval of darkness will be twice the duration of light; but, on approaching, the time of obscurity will decrease, and that of light increase, until you advance within three leagues of it, when the dark will not wholely disappear; but the greatest power of light will be to the least, as twenty-four to one. (Those making the Light, and unable to obtain a pilot, may bring it to bear W.N.W., and run boldly for it, until within a cable's length, then steer W. by S. until in 5 fathoms, where there is safe anchorage.

When you make the light with a fair wind, bring it to bear W. by N. or W.N.W., then steer for it until you are within two cables' length distance: come no nearer to it, but run in until it bears N. by E.

With adverse weather, and you cannot get a pilot from the lighthouse, after bringing it to bear N. by E. as above, you may run W. by S. two miles, until a harbour *light* on the N.E. end of Long Island, (hereafter noticed,) bears N.W. by N. Then steer N.W. about one mile, or until the outer lighthouse is hid by George's Island, where you may anchor in safety, in *Nantasket Road*, and in from 5 to 7 fathoms.

If the wind be contrary, you may stand to the southward till you bring the outer light to bear W.N.W., and to the northward till it bears W.S.W., until you come within 3 miles of it; then you must not stand to the northward any farther than to bring the light to bear W. by N., nor to the southward than till it bears W.N.W.; you may safely anchor in the bay, if the wind be off the shore.

From off Cape Anne to Boston lighthouse, your course is S.W., and the distance nearly 8 leagues. The LIGHTHOUSES at CAPE ANNE stand on Thatcher's Island;† when they bear S. by W. from you, they are on with each other. To go clear without Thatcher's Island Ledge, you must keep about 3 miles distant from the lighthouse. In thick weather, a gun will be fired from the lighthouse, to answer any signal which may then be made.

Note. When you proceed from Cape Cod to Boston Bay, with a flood-tide, you should steer about one point to the northward of the course already described, because the flood sets into Barnstaple Bay. This precaution is the more necessary when the wind is northerly. Similar care is requisite in steering from Boston Bay to Cape Cod.

Until you advance to within two leagues of Boston Lighthouse, you shoalen your water from 35 to 19 fathoms. The soundings are irregular. On the Cape Anne shore the bottom is rocky; but, towards Cape Cod, it is of fine sand.

On the days of the full and change of the moon, it is high water off Boston Lighthouse at ten o'clock. It flows off the town till a quarter of an hour past eleven. The spring-tides rise 16 feet perpendicularly; neap-tides, 12 feet.

TO SAIL IN DURING THE NIGHT, OR TURN WITHIN THE LIGHTHOUSE ANCHORAGE.—Coming from sea in the night, bring the lighthouse to bear West, and steer for it, observing to incline your course southerly as you approach, in order to give a berth of two cables' length to the Lighthouse Island. When you are abreast of the light, shape your

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* CAPE COD is low sandy land. *Cape Anne* is middling high, with many trees on it, and is farther to be distinguished by *Pigeon Hill*, which appears like a boat bottom upwards. This hill is about a mile to the south of Halbert Point.

The entrance of Boston Harbour lies between the Lighthouse Island on the north side, and Point Alderton with Nantasket Heights, on the south. Two huts are erected near the lighthouse, with accommodations for shipwrecked seamen; and a cannon is mounted at the lighthouse, to answer signals.

† The lanterns of these lighthouses are one-third of a mile apart, and 90 feet above the sea: the lights may be seen 7 or 8 leagues off.

course

course West, until it bears from N.N.E. to N.E. Here, if not acquainted with the harbour, you may anchor till day-light. With the wind between the S.W. and N.W. quarters, a ship may, in great safety, turn up within the Lighthouse anchorage, taking care not to stand farther southward than to bring the lighthouse to bear W.S.W., nor farther northward than N.N.W.

BOSTON HARBOUR.—Off the entrance of the harbour is a small shoal, called the *Cod Bank*, which lies E. by S. nearly three miles from the lighthouse, and in the fairway of the harbour, with Point Alderton and the north sides of the two islands within it* nearly in a line, W. ½ S., and the S.W. ends of the two outer islands on the north side,† in a line, bearing N.W. ¼ W.

On the South, or larboard, side of the entrance, are *Harding's Rocks*, a cluster steep-to, and which lie at the distance of 2¼ miles S.E. from the lighthouse. At low water the largest rock shows itself about twenty feet long and four feet high. It is surrounded by smaller blind rocks, extending about 140 fathoms on all sides. The marks for the largest are the S.W. point of the Lighthouse Island and western point of Great Brewster Island in one, and Nahant Rock, nearly N. by E. a small ship's length open with the S.W. end of the rocks called the Graves.‡ A *white buoy* is now laid on the N.E. side of the Hardings, which is, on entering, to be left on the larboard hand.

Alderton Shoal extends in a northern direction from the bluff head of Point Alderton, on the South side, and about one-third over. There is a *red buoy* on the outer part of this shoal, which bears from the white buoy of the Hardings N.W. by W. ¼ W. one mile and a half.

The *Egg Rocks* are a cluster, above water, on the north side, at the distance of half a mile E. by N. from the lighthouse on Brewster I.

The *Beacon* on the S.W. end of the Spit of Great Brewster Island stands at the distance of a mile and a quarter W. ¼ S. from the lighthouse. It marks the entrance of the Narrows,† which lie between Lovell's Island on the East, and George's Island, with Gallop and Nick's Mate Islands, on the West.

The *Centurion*, a rock of eleven feet at low water, lies at nearly half a mile S. ¾ W. from the beacon, and is left, on entering the Narrows, on the West or larboard side. It lies with the S.E. points of Great Brewster and outward Brewster Isles in a line, and one-third of Nick's Mate Island shut in with the east side of George's Island.

From the S.E. side of George's Island a rocky bank extends to the distance of more than a quarter of a mile, and has on its extremity a black buoy. The entrance of the Narrows lies between this buoy and the Beacon Point.

On *Nick's Mate Island*, at the other end of the Narrows, upon the western side, is a *beacon*, or monument: and upon the northern part *Long Island*, nearly a mile to the westward of Nick's Mate Island, is a *lighthouse*, lighted with ten patent lamps, elevated on a tower of twenty feet, with a lantern seven feet in height.

Sailing Directions.—On coming inward, direct from the East, for Boston Harbour, the proper parallel, if it can be kept, is 42° 20′ N. The Cod Bank, already described, lies in 42° 19′ 40″. If a ship should happen to fall to the southward of the harbour, especial care must be taken to avoid the *Cohasset Rocks*, which lie at some distance from the land, five miles to the south-eastward of Point Alderton. Of these rocks, the outer one, called *Minot's Rock*, has a black buoy on it, which lies in five fathoms. From this buoy the course to Boston Harbour is N.W., distance two leagues. In running thus, you will pass the white buoy on Harding's Rocks, and may thence haul up to the westward, passing between the Lighthouse Island and the red buoy on Alderton Shoal.

From the middle of the Lighthouse Channel steer W. by N. one mile, to the beacon on the Spit, to which you may approach within one quarter of a cable's length, leaving it on the starboard hand, while the Centurion Rock and black buoy on the shoal ground of George's Island are left on the larboard. Having thus entered the Narrows, the course up to Gallop Island Point is N.W. by N. three-quarters of a mile; and thence through, by Nick's Mate, N.N.W. half a mile. The beacon on Nick's Mate may be left on the larboard hand, at the distance of a cable's length.

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* Nantasket and Puttock Isles. † Outward Brewster and Green Island.

‡ The Graves are described hereafter.

From Nick's Mate, the course for Castle Island, through the main channel, is W. by N. three miles. In running thus you will first leave a *white spar buoy* on the Lower Middle Ground upon the starboard hand, which buoy is a mile below Castle Island.* You will next see a *white buoy* upon the Castle Rocks, which lies in 2 fathoms, on the larboard.

When abreast of the castle, steer N.N.W. one quarter of a mile, to clear the Upper Middle Ground, which has a black buoy on it, in 2 fathoms, to be left on the larboard hand. Should this buoy happen to be taken up, run N.N.W. until the two northernmost steeples in Boston are a handspike's length open; a course then N.W. by W. 2 miles, will bring you up to the town.

BROAD SOUND, BOSTON.—Broad Sound is the northern entrance of Boston Harbour, but is not a proper channel for large vessels. Without its entrance are the *Graves*, a cluster of rocks appearing white, and which lie in latitude 42° 22′ 30″: these may be left on the larboard hand, at the distance of two cables' length: bring them to bear S.E., and run on S.W. by W. This course, for four miles, leads up to the light-house on the north point of Long Island, described above.

But observe that, between the Graves and Long Island, there are several ledges, particularly the *Devil's Back*, the *Barrel*, and *Aldridge Ledge*, besides the *Ram's Head Bar*, stretching from the north end of Lovell's Island, and the *Faun Bar*, stretching from Deer Island, on the opposite side. The outer reefs are the Barrel and Devil's Back; near the first is a black buoy with a white vane, which is moored about 7 fathoms N.E. from the rock, in 3½ fathoms of water, at about two miles W. by S. from the body of the Graves; W.N.W. from the house on Green Island, and with Long Island Head S.W. ¾ W. nearly 2¼ miles.

The *lighthouse* on Long Island Head, noticed on the preceding page, exhibits a *fixed* light at 80 feet above the level of the sea, and is very serviceable in directing vessels during the night.

The *Devil's Back* is distinguished by a red buoy, which lies in 4 fathoms, and is to be left on the larboard side. On the *Ram's Head Bar* is a black buoy, in 15 feet of water (larboard): and, on the N.E. point of *Faun Bar* is a white buoy, which is to be left on the starboard side. The last lies in 2½ fathoms, with Long Island Head Light bearing S.W. *Aldridge's Ledge* lies nearly in mid-channel between the Ram's Head and the N.E. end of Faun Bar; there is a channel of 3 fathoms on each side. Here you enter the main channel to Boston.†

SALEM HARBOUR.—The entrance of Salem Harbour is distinguished by two lighthouses on Baker's Island, near the middle of the entrance; these lights are 50 feet asunder, one is 15 feet higher than the other, and they bear, when in a line, N.W. ¼ W.

Baker's Island lies on the south side of the principal entrance to Salem Harbour, and is 4½ miles to the eastward of the town of Salem. The water is deep near the island, and there is no convenient landing-place. The north and east sides are high and rocky. The bases of the lighthouses are about 45 feet above the level of the sea. The lower lighthouse, which is towards the north, is 25 feet high; the upper one 56½ feet. The high light may be seen from 6½ to 7 leagues off.

If bound into this harbour, and you fall in with Cape Anne, supposing Cape Anne lights to bear N.N.W. about 2 miles distant, your course will be W.S.W. about 3 leagues, then W. by S. 7 or 8 miles, which will bring you in sight of the lights on Baker's Island.

But, should you fall in to the southward, when proceeding for the lights, you should, so soon as you have made them, bring and keep the northern or lower light open to the eastward of the other, and thus run for them: this will carry you to the eastward, and clear of the south breaker of Baker's Island, which is very dangerous.‡

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* The American Coast Pilot also says, The Lower Middle Ground, which lies on the north side of the channel, a little above Spectacle Island, and which is, in part, dry at low water, has on its eastern part a red buoy, and on the western part a black buoy, in two fathoms; to be left on the starboard hand.—(*10th Edit. p.* 166.)

† It is to be noticed that, during the winter season, the upper buoys of Boston Harbour are taken up.

‡ On the S.E. part of these breakers is a spar buoy, painted black, and which bears from the lights on the island S.S.E. ¼ E. 2¼ miles.

Should

Should the wind be westerly, when beating up, you should not stand to the southward or westward farther than to shut one light in with the other; otherwise you will be in danger of the south breaker, above mentioned; neither stand to the northward farther than to bring the lights W. by S. ½ S., or you will be in danger of *Gale's Ledge*, a ledge which bears from the lights N.E. by E. one mile and three-quarters distant.

The Common or Ship Channel into Salem is between Baker's Island and Misery Isles. It is about a mile wide: and you may, so soon as you are up with Baker's Island, pass within 100 fathoms of it, and steer W. by N. for the *Haste*, a broken rock above water, which lies near the middle of the channel, with Baker's Island W. by N. 2¼ miles, and at 1¼ mile from Salem Neck. This course will lead clear to the southward of *Hardy's Rocks*, a ledge covered at high water, and to the northward of *Bowditch's Ledge*.*

From mid-channel, between Baker's and Misery Islands, you may steer W.N.W. till you have passed Bowditch's Ledge, or until *Cat Island*† comes open to the westward of Eagle Island; then haul up for the *Haste*, above mentioned.

You may anchor safely in 5 fathoms; but, to proceed farther, pass the Haste at the distance of about half a mile on the larboard, and steer S.W. by W., which will carry you to the harbour. Observe, however, that a rocky ledge stretches from the N.E. end of Winter Island, and that a rock, called *Abbot's Rock*, lies abreast of it, to avoid which keep a quarter of a mile from shore. This rock has 7 feet over it at low water, and is found by bringing Castle-hill and house into the cove north of Port Pickering, and Beverley Meeting-house well in with Juniper Point, the S.E. point of Salem Neck.

Be cautious, when keeping off-shore, in order to avoid Abbot's Rock, that you do not go so far as to get on the *Aqua-vitæ*, sunken rocks lying E.S.E. nearly half a mile from Port Pickering.

Should you, when coming from the south-eastward, find yourself near the *Half-way Rock*,‡ you may bring it S.E., and steer N.W. for the Haste, passing near the *Satan* or *Black* Rock. The latter is above water, steep-to, and bears S.W. by S. 1½ mile from Baker's Island. It should be left on the larboard hand, and the *Brimbles*§ and *Eagle Island* on the starboard. By continuing this course, you leave the Haste on the larboard, and enter the Ship Channel, whence proceed as above directed. Common tides here rise about 12 feet.

MARBLEHEAD HARBOUR.—Vessels bound to Marblehead, falling to the southward, and running for the lights on Baker's Island, after making them, must keep the north and lower one open to the eastward of the southern light, and run for them, which will carry them to the eastward, and clear of the south breakers off Baker's Island, which bear from the lights from S.E. ¼ S. to S.S.E. ¼ E. distant two miles.

Having made the lights, with a westerly wind, and beating, when within 2½ miles of them, you may not stand to the southward and westward so far as to shut the northern light within the southern one, on account of the south breakers; nor to the northward farther than to bring the lights to bear W. S.W. ½ W. on account of Gale's Ledge, which bears from the lights N.E. by E. distant 1¾ mile.

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* *Hardy's Rocks*, now distinguished by a beacon, lie W. ¾ N. from Baker's Island lights, distant five eighths of a mile. The rocks appear at half-tide. On *Bowditch's Ledge* is a black spar-buoy, bearing from Baker's Island W. N.W. one mile and a quarter distant.

† *Cat Island* is about S.W. by W. a mile and a half from Baker's Island, and a mile from Marblehead Neck, ranging nearly between the two. On its N.W. end is a high beach, directly opposite the point of Marblehead, called Peach's Point. The shore is irregular and rocky. On the southern side of the island are three high rocks, two of which are connected with the island by bars of sand, uncovered at low water: the other stands boldly up between these two, but more southerly. The Marblehead Marine Society has erected on Cat Island Rock a spar 40 feet high, to the top of which is attached a cask, of about 130 gallons, and which is a useful mark from sea.

‡ The *Half-way Rock*, about 180 feet in diameter, 40 feet high, and bold-to, lies to the east of Marblehead, about 2½ miles from the nearest land, and half way between the lighthouses of Boston and Thatcher's Island. On this rock a pyramidal monument or beacon has been erected, the stone-work of which is 15 feet high, with a base of 10 feet: above the stone-work is a spindle 15 feet high, on which is a copper ball, two feet in diameter.

§ The *Brimbles* are sunken rocks, bare at low water: near them is a spar buoy, painted red, which is seen out of water at half-ebb.

Drawing

Drawing near the lights, take care to avoid the ledge, called the *Whale's Back*, which bears from the lights N. by E. distant four-fifths of a mile.

In going into *Marblehead*, and being up with the lights, give the north point of *Baker's Island* a berth of one-quarter of a mile, or less. Having the lights in a line, you will be up with the point. When the south light is open with the north light, you have then passed the point, (leaving *Misery Island* on your starboard hand, which bears from the lights N.W. ½ N. four-fifths of a mile). Then steer S.W. by S. or S.S.W. until you bring the south light to bear N.E. by E. ½ E., then steer S.W. by W. ½ W., three miles, *for Marblehead Harbour*. You will leave Hardy's Rocks, Eagle Island, and Gray's Rocks, on the starboard hand; Pope's Head, Brimbles, and north point of Cat Island, on the larboard hand. The Brimbles bear from Eagle Island S.S.E. ½ E. distant half a mile; and Gray's Rock, from the north point of Cat Island, N.W. by W. seven-eighths of a mile.

Falling in with the south point of Baker's Island, and it blowing hard from the eastward, if you cannot avoid it, you may pass the point by keeping it well on board, say at the distance of from 20 to 50 fathoms from the shore, where you will have from 4 to 5 fathoms of water. When up with the S.W. point, steer W.S.W., which will carry you between the North Gooseberry and Pope's Head, leaving the former on your larboard hand, and Pope's Head on your starboard hand, between which you will have from 3½ to 5 fathoms of water. So soon as you have passed Pope's Head, haul to the northward, until the south light bears N.E. by E. ½ E., then steer S.W. by W. ½ W. for Marblehead Harbour.

Vessels coming from the eastward, and running for Half-way Rock, now distinguished by its beacon, must not bring the rock to bear to the southward of W.S.W., to avoid the south breaker, which bears from Half-way Rock N.E. ½ E. distant one mile. Being up with Half-way Rock, and bound into Marblehead, bring the rock to bear E.S.E. ½ E., and steer W.N.W. ½ W. for Fort Head, distant 3 miles, leaving Cat Island on the starboard hand, which bears from Half-way Rock W.N.W. distant 1¾ mile, and Marblehead Rock* on the larboard hand, which bears from Half-way Rock W. ¾ N. distant 2 miles. Black Rock bears from Half-way Rock N.W. by W. distant 1½ mile. Cat Island Rock and Point Neck bear East and West of each other, distant about one mile.

Vessels, being up in Boston Bay, may, by bringing the Boston Light to bear S.S.W., run N.N.E. for Marblehead Rock; they are distant from each other about 12 miles. Half-way Rock and Boston Light bear from each other S.W. and N.E., distant 15 miles.

Note.—The Whale's Back is covered at high water, and may be seen at quarter-ebb. Gale's Rocks are seen only at low spring-tides. The south breakers off Baker's Island are always covered. The Brimbles are covered at high water, and are seen at half-tide. Black Rock is always out of water, but low. Cat Island Rock, Half-way Rock, Marblehead Rock, Gray's Rock, and Pope's Head, are large, and high above water. Half-way Rock is very bold all round it. Eagle Island is bold only on the south and east; from the N.E. part of it, quite to Hardy's Rocks, is very shoal water, and no passage for ships.

BEVERLEY and MANCHESTER.—To enter the harbour of Beverley, follow the directions for Salem Harbour, till you bring the Haste to bear E.S.E., and run W.N.W. about 2 miles, and you reach Beverley Bar, which is a spot of sand running out from the southern or Salem side of the entrance, and has commonly a beacon upon the head of it, above a quarter of a mile from the shore. The bar has very shoal water on the eastern or outward side, near it, but good anchorage within. There is good water at the head of the bar. Having passed the bar, there is a sandy point from the Beverley or northern side of the entrance; and beyond this point are the Lobster Rocks, which bear from the head of the bar West a little South, and not half a mile distant, and they are above water at half tide. To avoid this point, after having well cleared the bar, you

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* *Marblehead Rock* bears S.W., about three-quarters of a mile, from the western part of Cat Island. It is above water, and may be approached to a short distance without danger. On the rock is a monument, or beacon, painted white at the bottom and black at the top; it is about 8 feet in the base, and 15 in height. The course and distance from Half-way Rock to Marblehead Fort is W.N.W. ½ W. 3 miles, leaving the beacon on Cat Island Rock on the starboard, and the monument on Marblehead Rock on the larboard, side. The monument bears from the beacon W.S.W. ¼ W. seven-eighths of a mile.

will

will steer towards Ram-horn Rock, which has also commonly a beacon, and is to be seen at half-tide, bearing S.W. by S. from the head of the bar, one-eighth of a mile distant. There are several fathoms of water within a vessel's length of Ram-horn Rock. Giving this a good berth, you then clear the sandy point, and steer for the Lobster Rock beacon, bearing from Ram-horn beacon N.W. by W. distant about one-quarter of a mile. Giving this a good berth, you are then opposite to the wharfs, and may anchor in deep water, and in a very safe and excellent harbour.

To enter *Manchester Harbour* you must bring the southern light to bear S. ½ E., and run North one mile, where you may anchor on good bottom.

N.B. Eastern Point bears from Baker's Island lights E. by N. ½ N. 7½ miles distant. Half-way Rock bears from the lights S. 2° E. 3 miles distant. Hardy's Rocks bear from the lights W. ¼ N. distant three-quarters of a mile.

LIGHTHOUSES of CAPE ANNE.—There are two lighthouses, already noticed, on Thatcher's Island; an island which contains about thirty acres of land, secured by an iron-bound shore, and situate at about a mile to the east of the main land of Cape Anne; or, more properly, of Anne's Island. Thatcher's Island affords no harbour, nor is there any safe anchorage very near it; there is, indeed, a passage between it and the main, through which small vessels may pass, even at low tide; but the water is shoal, and the bottom is covered by large stones. So soon as the lights are discovered by the mariner, he may be certain of his situation: for, being two separate lights, they cannot be mistaken for the single light of Boston, or of Cape Cod; nor for the Plymouth lights, which are double, but within a *very short distance from each other;* because the distance between the lights on Thatcher's Island is about one-fourth of a mile. The latter can be brought to range in one only in a S. by W. and N. by E. direction; while those of Plum Island, (Newbury Port,) when in a line, bear W. by S. and E. by N. The Plymouth lights cannot appear so arranged from the north until you are on the shore, and from the south only when nearly in with the land. The lights of Cape Anne are therefore of great utility to all vessels in their passage in or out; as they at once serve to point out the situations of the Salvages and Londoner, and for a point of departure to vessels bound coastwise or to sea. The latitude of Thatcher's Island is 42° 37′; the longitude 70° 33′.

CAPE ANNE or GLOCESTER HARBOUR is nearly 5 miles to the eastward of Manchester, and 6 miles south-westward from the lighthouses of Cape Anne. The entrance is a mile and a half broad, between the *East Point* and ledge, on one side, and the high land called *Norman's Woe,* on the other. In advancing to this place, from the eastward, you will have Cape Anne lights in one, when bearing N. by E. ¾ E.; and, if two miles from them, with that bearing, your course to the harbour will be nearly W.S.W. a league and a half. On falling in with the point give it a berth of about a mile.

You will now see a lighthouse on an islet up the harbour, called *Ten Pound Island.* This lighthouse, showing a *fixed light,* has its base about 25 feet above the level of the sea, and the tower is 20 feet high. With this lighthouse bearing N.N.E. you will be to the westward of the ledge extending from the eastern shore, and may steer directly towards it, which will carry you between the isle and a small ledge of 6 feet, which bears from it S.W. ½ W. about two-thirds of a mile.

Passing between the island and the ledge, you will find from 13 to 15 feet of water, low tides. The ground on the east side of Ten Pound Island is foul, and here is no safe passage. The south, west, and north sides are bold, and may be approached at low water within 50 fathoms. By giving the west end of the island a berth of from 50 to 70 fathoms, the course for the inner harbour is N.E.—You may anchor at any distance, from 100 fathoms to three-quarters of mile from the island, with the light bearing from South to S.W. The depths are 6, 5, 4, and 3, fathoms, at low spring-tides; the bottom muddy. The inner harbour is land-locked with all winds.

In the outer part of the harbour there is safe and good anchorage against a northerly or east wind, in 7½ to 6½ fathoms, muddy bottom, the lighthouse bearing S.E. by E. In the S.E. harbour there is similar anchorage, with the light from N. by E. to N.N.W.; the depths 9 to 6 fathoms; distance from the light one-eighth to half a mile.

Bearings of several Ledges, &c. from the Lighthouse on Ten Pound Island.

The Ledge extending from the eastern point bears from the Light S. by W. ½ W. about 2 miles, and has over it from 6 to 10 feet of water. Its extent is about half a mile.

A single rock lies about midway between the eastern point and Norman's Woe, called the *Round Rock*, and has 12 feet over it at low spring-tides. It bears from the Light S.W. ¼ S.

At about 30 fathoms off from Norman's Woe is a large high rock, 20 to 30 fathoms in diameter; and, at about 100 fathoms off this rock, in a southerly direction, is a ledge that has only 7 or 8 feet of water on it, at low ebbs.

At about a quarter of a mile off from *Freshwater Cove* lies a ledge of only 3 feet, which bears from the Light W. ¼ N. *(American Directions; omitting some particulars which appear to be erroneous.)*

BOSTON BAY *to* CAPE COD, &c.

IN THE PRECEDING PAGES have been given the general directions for sailing from Cape Cod to Plymouth, with particular directions for Plymouth; also those for Boston, Salem, Marblehead, Beverley, Manchester, and Cape Anne: we, therefore, now proceed to the southward, &c.

SCITUATE, &c.—About half-way between the harbours of Boston and Plymouth is the township of SCITUATE, having a little harbour with a lighthouse, which exhibits two lights, one above the other. The upper one is a *brilliant light*, at 50 feet above the sea; the lower, at 14 feet below the upper ONE, is a *blood-red light*, and much broader than the upper one. These lights were said to have been established more especially for the use of foreign vessels, which were formerly apt to fall into the dangerous bay to the northward, and upon the Cohasset Rocks. The lighthouse is erected on Cedar Point, which makes the north chop of the harbour; the first cliff, so called, making the south chop. There are four of these cliffs extending towards the north, the southernmost of which is the highest. The harbour is small, having only about 12 feet of water on the bar at high water, middling tides.

From the body of the lighthouse, the northerly part of Cedar Point, and a ledge called Long Ledge, extend N.N.W. nearly one mile; so that vessels falling in a little more than one mile northward of the light, may bring the light to bear South; and, by making good their course North, they will clear the outer ledges of Cohasset Rocks. Half a mile east of the body of the light will clear Cedar Point, Long Ledge, and the First Cliff Ledge. Ledges extend from all the four cliffs, but none between; and half a mile from shore will clear all, except in frigates and large vessels.

A S.S.E. course from the body of the light will clear the point called Branches Point; consequently, if the light has a proper berth, there can be no danger in steering in that direction.

There is a passage within Cohasset Rocks, used by coasters, which is found by giving the light a berth of half a mile, and running N.W. by N. to the southerly entering rock.

At about two miles W. by N. from the light is a meeting-house, and near the N.W. side of the harbour is a farm-house, with two large barns at a little to the north. To enter the harbour, the mouth of which is about one-third of a mile broad, bring the meeting-house or farm-house to bear about W. by N. from the middle of the entrance, and run in, on that direction, for the farm-house, until you have passed the bar, which is a hard bed of stones and gravel, that does not shift; and, after passing the bar, and coming on sandy bottom, haul up and anchor near the beach, on the south side of the harbour.

PLYMOUTH HARBOUR.—The directions for this harbour have been already given on pages 58, 59.

CAPE COD, &c.—Cape Cod is the northern part of the peninsula of Barnstaple, antiently called Namset; and now commonly that of Cape Cod. On the hook of the Cape is *Province Town*, distinguished by its useful harbour, which has depth of water for any ships. On its extremity, called Race Point, is a small lighthouse, and there is a larger, called that of the Clay Ponds, more to the S.E. The inhabitants depend, chiefly, on the cod-fishery for subsistence.

The LIGHTHOUSE of the CLAY PONDS, in latitude 42° 3′, and longitude 70° 8′, is erected on land elevated about 150 feet; which, with the elevation of the lantern, makes the whole height nearly 200 feet above high-water mark. The light, which was *formerly revolving*, is now *fixed*. There is generally a haze over the cape, and the light is seldom seen at more than six leagues off.

If

If outward bound from Boston lighthouse, and you would wish to fall in with Cape Cod, the course is E.S.E. 13 leagues; thence 3 leagues to the lighthouse. When up with the lighthouse, and it bears S.W. two leagues, you may thence steer to the S.E.

If inward bound, and you want to fall in with the back of Cape Cod, bring the light to bear S.W. two leagues distant; then steer W.N.W. for Boston lighthouse.

The LIGHTHOUSE on the RACE POINT of CAPE COD was first lighted on the 5th of November, 1816. It is 25 feet above the level of the sea, and 155 feet distant from high-water mark. It is a revolving (or repeating) light, on the same principle as that of Boston, already noticed; and is, therefore, readily known from the light on the high land, which may now, with propriety, be called the HIGH LIGHT of CAPE COD. The light on Race Point cannot be seen by vessels coming from sea, until it bears S. by W. ½ W., when they may run for it.

Race Point is very bold, and has a number of fish-houses on it. From one to three miles to the southward of Race Point, is what is called Herring Cove, where there is good anchoring half a mile from the shore, (the wind being from East to N.N.E.,) in 4, or even in 3, fathoms.

Vessels coming in from sea, or around Cape Cod, will not make the light on Race Point until it bears S.S.W., the lantern being covered with copper from N.N.E. to E.S.E. to prevent its being mistaken for Boston Light. This lighthouse was erected to guide vessels into *Provincetown Harbour*, and to enable those which are caught in Boston Bay, with an easterly gale, to find safe anchorage.

Vessels bound for Provincetown Harbour, may run for the light when it bears South, or any where to the eastward of it, and pass it within half a mile; then steer S.S.E. until the light on the high-land of Cape Cod bears E. by N.; then run N.E. until the light on the high-land bears E. ½ S.; then steer N.W. up the harbour, and anchor in 3½ or 4 fathoms.

In beating into Provincetown Harbour, stand to the eastward into 4 or 3½ fathoms, but no farther westward than into 8 fathoms, in order to avoid the spit of Long Point, which is steep to 9 or 10 fathoms.

Vessels caught in Boston Bay, in an easterly gale, should endeavour to make Race Point light. If you can make the light, run within half a mile of it; so soon as it bears E.N.E. haul up E.S.E., or as near that as the wind will permit, and anchor in from 10 to 4 fathoms of water, where you will find a lee with the wind from N.N.E. to E.S.E. Should it shift to N.W., you have Provincetown Harbour under your lee. Ships of war should not bring the light to bear more westerly than N. by W., and steer S. by E., to pass Wood End Bar in 10 fathoms. So soon as the light on the high-land of Cape Cod bears E. by N., run N.E. until you get into 8 fathoms, where you may anchor with the High Light bearing East.

Upon Long Point, at the entrance of Provincetown Harbour, there is now a *fixed* harbour-light. From that on Race Point the course to this place is S.S.E. until Long Point bears N.E. by N. This clears Wood End Bars. With the light bearing N.E. by N. you may run for it until within one-third of a mile; pass it at about that distance, then haul up N.N.W. and anchor in 4 or 5 fathoms.

Ships of war should bring the light on Race Point to bear N. by W., and steer S. by E. until the Long Point light bears N.E. by N., in order to pass Wood End Bar in 10 fathoms; continue this course until Long Point light bears N.E. by N., then steer N.E. until you are in 8 fathoms of water, when you should anchor with the High Light on the high-lands of Cape Cod bearing from E. ½ N. to E. ½ S.

At full and change, it is high water off Race Point at 10 hours and 45 minutes. On leaving Cape Cod, if bound for Boston, you must calculate the tide, as the flood sets strongly to the S.W.

The lighthouse of Cape Anne and the high light of Cape Cod bear from each other S.S.E. ½ E. and N.N.W. ½ W. distant 13½ leagues.

WELLFLEET.—On Billingsgate Island, at the entrance of Wellfleet Bay, 4½ leagues S.E. by S. from Race Point light, there is now a *fixed light*. Close to the beach, on the south side of the island, there is good anchorage in 3 or 4 fathoms of water, with the wind from N.W. to East. From the light a long shoal extends 3 miles to the westward. Bring the light to bear E.N.E. and you may run for it until you are abreast of it, when you

you may anchor, as above, in 3 or 4 fathoms, near the beach. In rounding the shoal approach no nearer than in 2½ fathoms. So soon as you deepen to 4 fathoms, haul up for the light, and anchor, as above directed.

BARNSTAPLE.—The entrance of the port of Barnstaple bears S. by W., 19 miles, from Race Point light, and S.E. ¼ S., 7 leagues from the Plymouth or Gurnet lights. A *fixed harbour-light* is established here. On advancing from the northward, keep into 5 fathoms of water until the lighthouse bears S.W. ½ W., which will bring you up to the buoy on the Bar; haul close round this buoy, leaving it on your starboard side; run two cables' length S.S.W., then steer S.W. by W. ½ W. a mile and a half, which will bring you up with the tongue of Yarmouth Flats, or until the light bears S.W. by S., then steer for the light. Be careful to make the above courses good, as the flood sets strongly over Yarmouth Flats, and the ebb strong to the northward over the Bar. Continue to run for the light until within a cable's length of the beach, and follow the shore round the point. There is safe anchorage inside, abreast of the light, against all winds, the light bearing from S.W. to N.E., in from 5 to 2¼ fathoms. There are 7 feet of water on the Bar at low water, and the tide flows 10 feet. Vessels drawing 8 feet may, at high water, bring the light to bear S.W. ½ W., and run directly for it. High water, full and change, at XI h.

DESCRIPTION *of the* EASTERN COAST *of the County of* Barnstaple, *from* RACE POINT, *in latitude* 42° 5′, *to* Cape Malabar, *or* Sandy Point *of* Chatham, *in latitude* 41° 33′; *pointing out the Spots on which the Trustees of the Humane Society have erected Huts, and other Places where shipwrecked Seamen may look for shelter. By a Member of the Humane Society.*— 1804.

THE curvature of the shore, on the west side of Provincetown, and south of Race Point, is called Herring Cove, which is 3 miles in length. There is good anchoring-ground here; and vessels may ride safely in 4 or 5 fathoms of water, when the wind is from north-east to south-east.

On Race Point stand about a dozen fishing-huts, containing fire-places and other conveniences. The distance from these huts to Provincetown, which lies on Cape Cod Harbour, is 3 miles. The passage is over a sandy beach, without grass or any other vegetable growing on it, to the woods, through which is a winding road to the town. It would be difficult, if not impossible, for a stranger to find his way thither in the dark; and the woods are so full of ponds and entangling swamps, that if the road were missed, destruction would probably be the consequence of attempting to penetrate them in the night.

Not far from Race Point commences a ridge, which extends to the head of Stout's Creek. With the face to the east, on the left hand of the ridge, is the sandy shore; on the right is a narrow sandy valley; beyond which is naked sand, reaching to the hills and woods of Provincetown. This ridge is well covered with beach-grass, and appears to owe existence to that vegetable.

Beach-grass, during the spring and summer, grows about 2½ feet. If surrounded by naked beach, the storms of autumn and winter heap up the sand on all sides, and causes it to rise nearly to the top of the plant. In the ensuing spring the grass sprouts anew; is again covered with sand in the winter, and thus a hill or ridge continues to ascend, so long as there is a sufficient base to support it, or till the circumscribing sand, being also covered with beach-grass, will no longer yield to the force of the winds.

On this ridge, half-way between Race Point and the head of Stout's Creek, the trustees of the Humane Society have erected a hut. It stands a mile from Peaked Hill, a land-mark well known to seamen, and is about two and a half miles from Race Point. Seamen, cast away on this part of the coast, will find a shelter here; and, in north-east storms, should they strike to the leeward of it, and be unable to turn their faces to the windward, by passing on to Race Point, they will soon come to the fishing-huts before mentioned.

At the head of Stout's Creek, the trustees have built a second hut. Stout's Creek is a small branch of East Harbour, in Truro. Many years ago there was a body of salt-marsh on it; and it then deserved the name of a creek. But the marsh was long since destroyed; and the creek now scarcely exists, appearing only like a small depression in the sand, and being entirely dry at half-tide. The creek runs from north-west to south-east, and is nearly parallel with the shore on the ocean, from which it is at no great distance. Not far from it the hills of Provincetown terminate; and, should not the hut be found, by walking round the head of the creek, with the face to the west, the hills on the right hand, and keeping close to the shore on the harbour, in less than an hour the shipwrecked seaman would come to Provincetown.

The Humane Society, several years ago, erected a hut at the head of Stout's Creek. But it was built in an improper manner, having a chimney in it, and was placed on a spot where no beach-grass grew.

grew. The strong winds blew the sand from its foundation, and the weight of the chimney brought it to the ground: so that, in January, 1802, it was entirely demolished. This event took place about six weeks before the Brutus was cast away. If it had remained, it is probable that the whole of the unfortunate crew of that ship would have been saved, as they gained the shore a few rods only from the spot where the hut had stood.

The hut now erected stands on a place covered with beach-grass. To prevent any accident from happening to it, or to the other hut near Peaked Hill, the trustees have secured the attention of several gentlemen in the neighbourhood. Dr. Thaddeus Brown, and Capt. Thomas Smalley, of Provincetown, have engaged to inspect both huts, to see that they are supplied with straw or hay in the autumn, that the doors and windows are kept shut, and that repairs are made when necessary. The Rev. Mr. Damon, of Truro, has also promised to visit the hut at Stout's Creek twice or thrice a-year; and the Rev. Mr. Whitman, of Wellfleet, distinguished through the country for his activity and benevolence, has undertaken, though remote from the place, the same charge.

From the head of Stout's Creek to the termination of the salt-marsh, which lies on both sides, and at the head of the East Harbour River, the distance is about three miles and a half. A narrow beach separated this river from the ocean. It is not so regular a ridge as that before described, as there are on it one or two hills, which the neighbouring inhabitants call islands. It may, without much difficulty, be crossed every where, except over these elevations. By these hills, even during the night, the beach may be distinguished from those hereafter to be mentioned. It lies from N.W. to S.E., and is in most parts covered with beach-grass. The hills have a few shrubs on the declivities next the river. At the end of the marsh, the beach subsides a little; and there is an easy passage into a valley, in which are situated two or three dwelling-houses. The first on the left hand, or south, is a few rods only from the ocean.

The shore, which extends from this valley to Race Point, is unquestionably the part of the coast the most exposed to shipwrecks. A N.E. storm, the most violent and fatal to seamen, as it is frequently accompanied with snow, blows directly on the land: a strong current sets along the shore; add to which, that ships, during the operation of such a storm, endeavour to work to the northward, that they may get into the bay. Should they be unable to weather Race Point, the wind drives them on the shore, and a shipwreck is inevitable. Accordingly, the strand is every where covered with the fragments of vessels. Huts, therefore, placed within a mile of each other, have been thought necessary by many judicious persons. To this opinion the trustees are disposed to pay due respect; and hereafter, if the funds of the society increase, new huts will be built here for the relief of the unfortunate.

From the valley above mentioned the land rises, and less than a mile from it the High Land commences, on the first elevated spot (the Clay Pounds) stands the lighthouse. The shore here turns to the south; and the High Land extends to the Table-Land of Eastham. This High Land approaches the ocean with steep and lofty banks, which it is extremely difficult to climb, especially in a storm. In violent tempests, during very high tides, the sea breaks against the foot of them, rendering it then unsafe to walk on the strand, which lies between them and the ocean. Should the seaman succeed in his attempt to ascend them, he must forbear to penetrate into the country, as houses are generally so remote that they would escape his research during the night; he must pass on to the valleys, by which the banks are intersected. These valleys, which the inhabitants call Hollows, run at right angles with the shore; and, in the middle, or lowest part of them, a road leads from the dwelling-houses to the sea.

The first of these valleys is Dyer's Hollow, one mile and a half south of the lighthouse. It is a wide opening, being two hundred rods broad, from summit to summit. In it stands a dwelling-house, at a quarter of a mile from the beach.

A mile and a half south of Dyer's Hollow is a second valley, called Harding's Hollow. At the entrance of this valley the sand has gathered, so that, at present, a little climbing is necessary. Passing over several fences, and taking heed not to enter the wood on the right hand, at the distance of three-quarters of a mile, a house is to be found. This house stands on the south side of the road; and, not far from it, on the south, is Pamet River, which runs from east to west through a body of salt-marsh.

The third valley, a half of a mile south of Harding's Hollow, is Head of Pamet Hollow. It may with ease be distinguished from the other hollows mentioned, as it is a wide opening, and leads immediately over a beach to the salt-marsh at the head of Pamet River. In the midst of the hollow the sand has been raised by a brush fence, carried across it from north to south. This must be passed, and the shipwrecked mariner will soon come to a fence which separates what is called the road from the marsh. If he turns to the left hand, or south, at the distance of a quarter of a mile, he will discover a house. If he turns to the right hand, at the distance of half a mile, he will find the same house which is mentioned in the foregoing paragraph.

The fourth opening, three-quarters of a mile south of Head of Pamet, is Brush Valley. This hollow is narrow, and climbing is necessary. Entering it, and inclining to the right, three-quarters of a mile, will bring seamen to the house, which is situated at the Head of Pamet. By proceeding straight forward, and passing over rising ground, another house may be discovered, but with more difficulty.

These three hollows, lying near together, serve to designate each other. Either of them may be used, but Head of Pamet Hollow is the safest.

South of Brush Valley, at the distance of three miles, there is a fifth opening, called Newcomb's Hollow.

Hollow, east of the head of Herring River, in Wellfleet. This valley is a quarter of a mile wide. On the north side of it, near the shore, stands a fishing-hut.

Between the last two valleys the bank is very high and steep. From the edge of it, west, there is a strip of sand a hundred yards in breadth. Then succeeds low brushwood, a quarter of a mile wide; and almost impassable. After which comes a thick perplexing forest, in which not a house is to be discovered. Seamen, therefore, though the distance between these two valleys is great, must not attempt to enter the wood, as, in a snow-storm, they would undoubtedly perish. This place, so formidable in description, will, however, lose somewhat of its terror, when it is observed, that no instance of a shipwreck on this part of the coast is recollected by the oldest inhabitants of Wellfleet.

Half of a mile south of Newcomb's Hollow is the sixth valley, called Pearce's Hollow. It is a small valley. A house stands at the distance of a little more than a quarter of a mile from the beach, W. by S.

The seventh valley is Cohoon's Hollow, a half of a mile south of Pearce's Hollow. It is not very wide. West from the entrance, several houses may be found at the distance of a mile. This hollow lies E. by N. from Wellfleet meeting-house.

Two miles south of Cohoon's Hollow, the eighth valley, is Snow's Hollow. It is smaller than the last. West from the shore, at the distance of a quarter of a mile, is the county road, which goes round the head of Blackfish Creek. Passing through this valley to the fence, which separates the road from the upland and marsh at the head of the creek, a house will immediately be found, by turning to the right hand, or north. There are houses also on the left, but more remote.

The High Land gradually subsides here, and, one mile and a half south, terminates at the ninth valley, called Fresh Brook Hollow, in which a house is to be found, a mile from the shore, west.

The tenth, two miles and a half south from Fresh Brook Hollow, is Plum Valley, about three hundred yards wide. West is a house, three quarters of a mile distant.

Between these two valleys is the Table Land.

After this there is no hollow of importance to Cape Malabar.

From Fresh Brook Hollow to the commencement of Nauset Beach, the bank next the ocean is about sixty feet high. There are houses scattered over the plain open country; but none of them are nearer than a mile to the shore. In a storm of wind and rain, they might be discerned by daylight; but, in a snow-storm, which rages here with excessive fury, it would be almost impossible to discover them either by night or by day.

Not far from this shore, south, the trustees have erected a third hut, on Nauset Beach. Nauset Beach begins in latitude 41 deg. 51 min., and extends south to latitude 41 deg. 41 min. It is divided into two parts, by a breach which the ocean has made through it. This breach is the mouth of Nauset or Stage Harbour; and, from the opening, the beach extends north two miles and a quarter, till it joins the main land. It is about a furlong wide, and forms Nauset Harbour, which is of little value, its entrance being obstructed by a bar. This northern part of the beach may be distinguished from the southern part by its being of a less regular form. Storms have made frequent irruptions through the ridge, on which beach-grass grows. On an elevated part of the beach stands the hut, about a mile and a half north of the mouth of Nauset Harbour. Eastham meeting-house lies from it W.S.W. distance a mile and three-quarters. The meeting-house is without a steeple; but it may be distinguished from the dwelling-houses near it by its situation, which is between two small groves of locusts, one on the south and one on the north, that on the south being three times as long as the other. About a mile and a quarter from the hut, W. by N., appear the top and arms of a windmill. The Rev. Mr. Shaw and Elisha Mayo, Esq., of Eastham, have engaged to inspect this building.

The southern part of Nauset Beach, most commonly called Chatham Beach, and by a few persons Potanumaqunt Beach, begins at the mouth of Nauset Harbour, and extends eight or nine miles south to the mouth of Chatham Harbour. It is about fifty rods wide. A regular well formed ridge, which, in the most elevated part of it, is forty feet high, runs the whole length of it; and, with the exception of a few spots, is covered with beach-grass. This beach forms the barrier of Chatham Harbour, which, from Strong Island, north, receives the name of Pleasant Bay. A mile south of the entrance of Nauset Harbour it joins the main land of Orleans, except in very high tides, when the sea flows from the north-eastern arm of Pleasant Bay into the harbour of Nauset, completely insulating the beach. By those who are acquainted with the shallow, it may be safely forded at any time; but strangers must not venture to pass it when covered with water, as below the channel is seven feet deep. On this beach, about half way between the entrances of Nauset and Chatham Harbours, the trustees have erected a fourth hut. The spot selected is a narrow part of the beach. On the west, the water adjoining it is called Bass Hole. Salt-marsh is north and south of it next the beach, but it is here interrupted. Orleans meeting-house lies from it N.W. The meeting-house is without a steeple, and is not seen; but is very near a windmill placed on the elevated ground, a conspicuous object to seamen coming on the coast. It may be necessary to add, that there are three windmills in Orleans, forming a semi-circle; that the mill referred to is on the right hand, or N.E. point; and that the mill in the middle point of the semi-circle stands on still higher ground. The meeting-house of Chatham is situated from it S.W. This meeting-house is also without a steeple, and is concealed by Great Hill,

Hill, a noted land-mark. The hill appears with two summits, which are a quarter of a mile apart. The hut lies east from Sampson's Island, in Pleasant Bay. Timothy Bascom, Esq., of Orleans, has undertaken to inspect this hut.

Lest seamen should miss this hut, by striking to the leeward of it, the trustees have erected another on the same beach. It stands a mile north of the mouth of Chatham Harbour, east of the meeting-house, and opposite the town.

Another spot on the same beach would be a proper situation for a hut. It is north of the fourth hut, and east of the middle of Pochet Island. The highest part of the ridge is near it, south. A break in the ridge, over which the sea appears sometimes to have flowed, divides this high part from the northern portion of the beach.

On the beach of Cape Malabar, or the Sandy Point of Chatham, the trustees have built a sixth hut. This beach stretches from Chatham, ten miles into the sea, towards Nantucket; and is from a quarter to three-quarters of a mile in breadth. It is continually gaining south: above three miles have been added to it, during the past fifty years. On the east side of the beach is a curve in the shore, called Stewart's Bend, where vessels may anchor with safety, in 3 or 4 fathoms of water, when the wind blows from North to S.W. North of the Bend there are several bars and shoals. A little below the middle of the beach, on the west side, is Wreck Cove, which is navigable for boats only. The hut stands two hundred yards from the ocean, S.E. from the entrance of Wreck Cove, half of a mile. Between the mouth of the cove and hut is Stewart's Knoll, an elevated part of the beach. The distance of the hut from the commencement of the beach is six miles, and, from its termination, four. Great Hill, in Chatham, bears N. by W. distant six miles; and the south end of Morris' Island, which is on the west side of the beach, N. by E. distant four miles. Richard Sears, Esq., of Chatham, has engaged to visit the two last-mentioned huts.

Two miles below the sixth hut is a fishing-house, built of thatch, in the form of a wigwam. It stands on the west side of the beach, a quarter of a mile from the ocean. Annually, in September, it is renewed, and generally remains in tolerable preservation during the winter.

Another spot, a few rods from the sea, four miles south from the commencement of the beach, and half a mile north of the head of Wreck Cove, would be a proper situation for a hut. A little south of this spot, in storms and very high tides, the sea breaks over from the ocean into Wreck Cove.

Cape Malabar Beach may be distinguished from the two beaches before described, not only by its greater breadth, but also by its being of a less regular form. It is not so well covered with grass as Chatham Beach. From Stewart's Knoll, south, to the extremity, it is lowest in the middle. In this valley, and in other low places, fresh water may be obtained by digging two feet into the sand. The same thing is true of Nauset and Chatham beaches.

The six huts, the situation of which has thus been pointed out, are all one size and shape. Each hut stands on piles, is eight feet long, eight feet wide, and seven feet high; a sliding door is on the south, a sliding shutter on the west, and a pole, rising fifteen feet above the top of the building, on the east. Within, it is supplied either with straw or hay, and is farther accommodated with a bench.

The whole of the coast, from Cape Cod to Cape Malabar, is sandy, and free from rocks. Along the shore, at the distance of half a mile, is a bar, which is called the outer bar, because there are smaller bars within it, perpetually varying. This outer bar is separated into many parts by guzzles, or small channels. It extends to Chatham; and, as it proceeds southward, gradually approaches the shore, and grows more shallow. Its general depth at high water is two fathoms, and three fathoms over the guzzles; and its least distance from the shore is about a furlong. Off the mouth of Chatham Harbour there are bars which reach three-quarters of a mile; and off the entrance of Nauset Harbour the bars extend half a mile. Large heavy ships strike on the outer bar, even at high water, and their fragments only reach the shore. But smaller vessels pass over it at full sea; and when they touch at low water, they beat over it, as the tide rises, and soon come to the land. If a vessel is cast away at low water, it ought to be left with as much expedition as possible; because the fury of the waves is then checked, in some measure, by the bar; and because the vessel is generally broken to pieces with the rising flood. But seamen, shipwrecked at full sea, ought to remain on board till near low water; for the vessel does not then break to pieces; and, by attempting to reach the land before the tide ebbs away, they are in great danger of being drowned. On this subject there is one opinion only among judicious mariners. It may be necessary, however, to remind them of a truth, of which they have full conviction, but which, amidst the agitation and terror of a storm, they too frequently forget.

CHATHAM HARBOUR, on the south-eastern part of the peninsula of Cape Cod, is a convenient station for the fishery, and here about forty vessels are usually employed. It has but 20 feet of water at low tide, and the bar is frequently shifting. The vicinity has been remarkable for shipwrecks, as already shown. The access has, however, been much improved by two lighthouses on the point called *James' Head*, the lanterns

lanterns of which are about 40 feet above the sea, and contain fixed lights, which may be seen 5 or 6 leagues off, and are very useful to vessels bound to Nantucket, &c.

On the sandy point of Monamoy, at three leagues to the southward of Chatham lights, there is a *fixed harbour light*.

SECTION III.

The FREDONIAN COAST, &c., *from* NANTUCKET *to the* DELAWARE *and* PHILADELPHIA, *including* LONG ISLAND SOUND.

NANTUCKET and VINEYARD SOUNDS.—These sounds comprise all the navigation between the *Sandy Point* of *Monamoy* or Chatham, on the east, and *Buzzard's Bay* on the west; an extent of sixteen leagues. The southern boundaries are the islands of *Nantucket*, *Thuckanuck*, *Muskeget*, *Chapquidock*, and *Martha's Vineyard*, which are altogether connected by shoal grounds. The eastern entrance, (3 leagues broad,) is impeded by numerous rips and other shoals, as are likewise the central and western parts; and the whole presents an aspect of drowned lands, which, there can be little doubt, were, at some period, anterior to history, connected with the main.

The intricate navigation of the several channels has been greatly facilitated by numerous lighthouses, &c. On the north side is the fixed light on *Sandy Point*, already described: at eleven miles W.N.W. ¾ W. from this light is another, on the eastern side of *Hyannas Harbour*. On the N.E. or *Sandy Point of Nantucket*, is a similar fixed light, at 70 feet above the level of the sea. On the western side of the entrance to *Nantucket Harbour* are two harbour-lights. At seven miles W.N.W. from the N.E. point of Nantucket is a *floating light*, on the N.E. end of *Thuckanuck Shoal*; and, on *Cape Poge*, opposite to the N.E. end of Martha's Vineyard, is a lighthouse, which bears from the floating light W. ¼ N. 11 miles, and exhibits a *fixed* light at 55 feet above the level of the sea.

Martha's Vineyard is now distinguished by three lighthouses, exclusive of that on Cape Poge, above-mentioned; the next, on a pier at the entrance of *Edgartown Harbour*, is 3½ miles W.S.W. from Cape Poge, and another is on the west chop of *Holmes's Hole*, near the north point of the Vineyard.

GAY HEAD, the western extremity of Martha's Vineyard, is distinguished by a *lighthouse*, having a *revolving light*, at 150 feet high above the sea; and this constitutes the great mark for the western entrance of the Sound.

Upon the west end of *Cuttahunk*, which is the westernmost of the *Elizabeth Isles*, dividing the Vineyard Sound from Buzzard's Bay, there is a *fixed light*. Upon *Nashon*, the fourth island, from the west, of the same range, is another. The latter stands on the west side of an indent, called *Tarpaulin Cove*: and from it, at the distance of five miles to the east, is another, standing on *Nobsque Point*, Falmouth, at the end of the strait called *Wood's Hole*.

Between the west end of Nantucket and the east end of Martha's Vineyard lie the broken lands or isles called *Thuckanuck*, *Muskeget*, and *Chapquidock*, surrounded by shoals. To the westward of Muskeget is a swash of 2½ fathoms, leading to *Cape Poge*, the N.E. extremity of Chapquidock; and to the N.N.E. of Thuckanuck is a spit of sand, extending 6 miles in that direction. Upon the extremity of the latter is stationed the *floating light* above-mentioned, lying in 7 fathoms, with the Great Point Light of Nantucket bearing E.S.E. 6 miles; the light at the entrance of Nantucket Harbour S.S.E. 8 miles; and the centre of Thuckanuck Island S. S.W. ½ W. 7 miles. This light-vessel is, therefore, exceedingly useful to vessels in the Sound, both from the eastward and westward. The lighthouse on Cape Poge bears from it nearly W. ¼ N. 4 leagues, and that of Gammon Point, or Hyannas Harbour, N. by W. ½ W. 4 leagues.

The different lights on Martha's Vineyard, excepting that of Gay Head, are *fixed* lights. The lantern of Cape Poge is elevated 55 feet above the sea, as above mentioned, and its light can be seen over the Vineyard land.

NAN-

NANTUCKET.—The Island of Nantucket is situated between latitude 41° 14′ and 41° 23′, and between longitude 69° 53′ and 70° 15′; its N.W. side forms a fine road for ships, which, from the eastward, and under favourable circumstances, may be readily attained; but a N.W. wind causes a heavy swell. The harbour has a bar of sand, on which are only 7½ feet of water at ebb-tide, but within are 12 and 14 feet. The island has about 5000 inhabitants, and their prosperity has arisen chiefly from the whale-fishery, which they prosecute on all the American coasts, and even in the Pacific Ocean.*

The SHOALS OF NANTUCKET, to the south and south-eastward of the island, form a great impediment to the navigation. These shoals were formerly represented as extending from the island to the latitude of 40° 52′. They were thus represented in Captain Holland's chart. A chart of Nantucket, &c. subsequently published in America, exhibited the southern extremity in 40° 42′, and other charts were afterwards altered conformably thereto, upon the presumption of its accuracy. At length, however, it appears from a survey by Captain J. Colesworthy, made in June and July, 1821, that the southern shoal lies in, or about, the latitude of 41° 4′, and not so far to the south as exhibited even by Captain Holland. A subsequent examination by several experienced navigators of Nantucket corroborated the accuracy of the survey. In 40° 40′ the depth was found to be 30 fathoms, and in traversing southward of this parallel, not less than that depth could be found. The longitude assigned to the South Shoal is 69° 56′. This part is dangerous; being composed of hard white sand, over which the sea breaks in a tremendous manner. On it, in many parts, are but three feet of water. It extends from east to west, about a mile, and is two cables' length broad. The sea often breaks over 5 fathoms, both on the east and west. A rip extending from the western end has 7 fathoms over it.† The tides here set on every point of the compass in 12½ hours, but the southern tide runs longest, and with the most strength.

To the westward of the South Shoal the sea is clear, and the soundings regular. At seven leagues to the westward of the shoal, in 25 or 30 fathoms, black mud, of a smooth shining nature, may be found; and these soundings indicate the *Thuckanuck Channel.*

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* "The soil of Nantucket is light and sandy, but in some parts rich and productive. The inhabitants derive the greater part of their subsistence from the ocean; they hold the land in commou, and the greater part are of the society of *Friends*. All the cows, amounting to about 500, feed together in the herd; all the sheep, 14,000, in one pasture. The men are generally robust enterprising seamen, extensively engaged in the whale-fishery, and are as skilful and adventurous as any in the world."—*Carey and Lea's Geography, &c.* 1822.

The "*Letters from an American Farmer,*" written more than half a century ago, give a very pleasing and copious description of the peninsula of Cape Cod, with the islands of Nantucket, Martha's Vineyard, &c. In allusion to Nantucket, the writer says, "Here I can point out to you exertions of the most successful industry; instances of native sagacity, unassisted by science, the happy fruits of a well directed perseverance. When I meet with spots fertilized, grass growing where none grew before, grain gathered from fields which had heretofore produced nothing better than brambles; dwellings raised where no building materials were to be found, wealth acquired by the most uncommon means;—there I pause to dwell on the favourite object of my speculative inquiries.

"I want not to record the annals of the island of Nantucket;—its inhabitants have no annals, for they are not a race of warriors. My simple wish is, to trace them throughout their progressive steps, from their arrival here to this present hour; to inquire by what means they have raised themselves, from the most humble, the most insignificant beginnings, to the ease and the wealth they now possess; and to give you some idea of their customs, religion, manners, policy, and mode of living.

"Would you believe that a sandy spot, of about 23,000 acres, affording neither stones nor timber, meadows nor arable, can boast of a handsome town, consisting of more than 500 houses, should possess above 200 sail of vessels, constantly employ upwards of 2,000 seamen, feed more than 15,000 sheep, 500 cows, 200 horses, and has several citizens worth £20,000 sterling? Yet all these facts are uncontroverted.

"This island has nothing deserving of notice but its inhabitants; here you meet with neither antient monuments, spacious halls, solemn temples, nor elegant dwellings; not a citadel nor any kind of fortification, not even a battery to rend the air with its loud peals on any solemn occasion. As for their rural improvements, they are many, but all of the most simple and useful kind."

† This examination of the Nantucket Shoals was made under the direction, and at the expense, of *Mr. Edm. M. Blunt,* of New York. The Chart, corrected according to the *survey* of the Shoals, exhibits a depth of 9 fathoms on the southern extremity, in latitude 40° 57′, and longitude 69° 58′. Two miles farther north are 6 fathoms, and possibly less water.

Near the S.E. part of Nantucket Island is a shoal called the *Pochick Rip*, which commences at a short distance from the south of the village *Siasconset*, and thence extends in a curve to the E.S.E., South, and W.S.W., where it meets the end of another called *the Old Man*, which extends W.S.W. about four miles, and has over it from 9 feet to 3 fathoms of water. These shoals are divided by several swashes, through which small vessels may pass, but they cannot, with safety, be attempted by a stranger.

Between the Old Man, Tominy Head, and Pochick Rip, there is a very good roadstead or anchorage. With Tominy Head bearing N.E. by E. ½ E, and the southernmost land W. by N., there are 5 fathoms, with coarse sand: from this spot towards the Old Man are 5, 6, 6½, 7, 8, 9, 10, to 14, fathoms, red sand, then half-way between the two; from this the water shoalens to 13, 11, 8, 7, 5, 4, and 3, fathoms, fine sand with black specks.

Without, or to the eastward of, the Pochick Rip, is the *Bass Rip*, extending nearly in a north and south direction, about 8 miles, and lying nearly 3 miles without Sancoty Head; on some parts of this rip are only 8 feet at low water; on other parts 2½ and 3 fathoms, and it has one swash of 5.

The *Great Rip* lies nearly parallel to the former, at the distance of about eight miles from Sancoty Head. On the part of this rip, whence Sancoty Head bears W.N.W., are only 4 feet of water, and with the village named *Squam*, West, there are 5, but on other parts are 2½, 3, and 4, fathoms.

Fishing Rip, which, also, is nearly parallel with the former, is about 7½ leagues from Sancoty Head, and has on it from 5 to 7 fathoms of water. Its length is about 14 miles. Between this and the Great Rip the ground is uneven, and 12, 22, and 15, fathoms may be found.

About the coast of Nantucket and the Shoals, the bottom is generally sandy, and the tide very rapid. In moderate weather a vessel had better come to an anchor than be driven about. The course of the tides over the shoals is nearly regular. The N.E. tide makes flood. A south moon makes full sea in the harbour of Nantucket. A S.S.E. and N.N.W. moon makes high water on the shoals: the tide of flood sets N.E. by E., and ebb S.W. by W., from 2 to 3 miles in an hour; the rise and fall is from 5 to 6 feet.*

NANTUCKET SOUND.—At the entrance of this Sound, between the *Sandy Point* of Chatham and the island *Nantucket*, are the shoals called the *Snowdrift*, the *Pollock Rip*, *Stone-Horse*, *Little Round Shoal*, and *Great Round Shoal*, which form the eastern passages to Nantucket Harbour. The first two form nearly a right-angle with the southern extremity of the Sandy Point of Chatham, and thence extend three leagues to the E. by S.; the depths are variable. On the Pollock Rip, with Chatham lights bearing N.N.W., there are from 3 to 4 fathoms. In 14 feet of water, with Chatham lights bearing N. ½ W. 10 miles, and Monomoy or Sandy Point nearly W. ½ N. 5 miles, is a *red buoy*, in 14 feet of water. The shoalest water on the rip is said to be 5 feet.

The *Snowdrift* is a shoal which surrounds Monomoy Sandy Point, and extends to some distance eastward. A white buoy is placed upon it, at the distance of a mile to the S.E. of the point, and bearing from the red buoy on the Pollock Rip nearly W. ½ S. 3½ miles.

The *Stone-Horse* is the shoal next south of Pollock Rip. It is represented as half a league in length from east to west, while the channel between it and the western part of the Rip, called *Butler's Hole*, is nearly of the same breadth.

The *Little Round Shoal* is to the south-eastward of the Stone-horse, at the distance of half a league. It is distinguished by a white buoy, having a small pole on it. The least depth on this shoal is 7 feet. From its buoy Chatham Lights bear N. by W. 4½ leagues; a black buoy on the Great Round Shoal S.E. by S. 2½ miles, and the lighthouse on the north end of Nantucket S.W. by W., 3½ leagues.

The *Great Round Shoal* lies to the S.S.E. of the Little Round Shoal; it has a *black*

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* To those from sea, who make the island Nantucket to the northward, it may be known by two towers and four windmills, which stand upon an eminence near each other. *Tominé* or *Tominy Head*, vulgarly called *Tom Never's Bluff*, is the southernmost part of the island, and *Sankaté* or *Sancoty Head* is its easternmost, or rather its S.E. point. It is on the shore of this part of the island that the best fish are caught; as sea-bass, tew-tag, or black fish, cod, smelt, perch, shadine, pike, &c. In the fishing houses on shore the fishers dwell during the season.

buoy

buoy upon it, which bears from the white buoy on the Little Round Shoal S.E. by S. 2¼ miles, and the lighthouse on the north point of Nantucket W.S.W. 11 miles. The shoalest water on this ground is 5 feet.

The *Handkerchief*, which lies to the west of Monomoy or Sandy Point, has a white buoy on its S.E. point, which bears from Monomoy Point S.S.W. ½ W. two miles; from Nantucket light, N. by E. 3¼ leagues; and from the red buoy on Pollock Rip W. ½ S. 7 miles.

The *Point Rip* extends to the northward and eastward two miles from the Sandy Point of *Nantucket*. Its shoalest water is 8 feet. On its N.E. end is a red buoy, in 14 feet, from which Sancoty Head bears S. by E. 3 leagues; Nantucket light S.W. by W. ½ W. 2 miles; Thuckanuck light-vessel West, 7½ miles; and a *black buoy*, on a shoal called the *Horse-Shoe*, N.W. by W. ¾ W. 14 miles.

The *Horse Shoe*, above-mentioned, is a shoal, near the middle of the Sound, which takes its name from its figure. It is divided into two parts by a swashway, through which vessels from *Hyannas*, or the northern shore, commonly pass when bound to the south-westward, leaving the *black buoy*, above-mentioned, on the starboard side.

From the buoy last mentioned the entrance of Hyannas Harbour bears N.N.E. distant three leagues; the white buoy on the Handkerchief E. ½ N. 4½ leagues; Cape Poge lighthouse S.W. by W. 7 miles; Thuckanuck light-vessel S.W. ½ S. 8¼ miles; and the *red buoy* on the Rip of Nantucket S.E. by E. ¾ E. 14½ miles.

The light-vessel on the N.E. end of Thuckanuck Shoal has been heretofore noticed on page 72. This vessel lies nearly on a right line between the lights of Nantucket and Cape Poge, at one-third of the way from the former, which bears from it E.S.E. six miles.

MARTHA'S VINEYARD, the larger island to the westward of Nantucket, contains about the same number of inhabitants, who subsist by agriculture and fishing. Cattle and sheep are raised here in great numbers; and rye, corn, and oats, are the chief produce of the island. *Gay Head*, the western part of this island, is a peninsula, separated from the other part by a large pond. Indications of antient volcanoes exist here, and of those four or five craters are plainly to be seen; and it is traditionally reported that, at one time, the whalemen were directed in the night by the natural lights seen upon Gay Head. The principal harbours are that called Holmes's Hole, on the north side, upon which is seated the town of *Tidsbury*, and that of *Edgar-Town*, or the Old Town, on the eastern side, west of Chapoquidick Island.

This island is about six leagues in length from east to west. Its greatest extent, north and south, is about 8 miles. It is divided into three townships, *Edgartown* on the east, *Chilmark* on the west, and *Tidsbury* in the centre. Edgar is the best sea-port and the shire town, and *Holmes's Hole*, or the harbour of *Tidsbury*, has water sufficient for ships of the line. The latter is much resorted to by vessels requiring a wind for proceeding eastward to Boston and other ports.*

Martha's Vineyard, like Nantucket, is a great nursery of seamen, and supplies with pilots the numerous vessels with which this part of Fredonia abounds. Here are to be found the most expert pilots for the two Sounds, and the ports in their vicinity. In stormy weather they are at sea, on the look-out for vessels, which they board with singular dexterity, and hardly ever fail to bring safe to their intended harbour. *Gay Head*, the western point, distinguished by the lighthouse already noticed, is also remarkable for abounding with a variety of ochres, with which the inhabitants paint their houses; hence the coast appears of different colours, as will be noticed hereafter.

The Elizabeth Isles, six in number, and famous for their excellent dairies, form the natural division between Vineyard Sound and Buzzard's Bay. The principal isles of the group are Nashawn, or Nashon, Pasqui, Nashawina, Pune or Penequese, and Cuttahunk. On the S.E. side of Nashon, upon the S.W. side of a cove called *Turpaulin Cove*, is the lighthouse, with *fixed* light, already mentioned, in page 72.

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* *Holmes's Hole* is also a place of retreat for vessels during the winter. It has a post-office, where a regular mail is made up twice a week for Boston, &c., which is taken in a passage-boat to Falmouth, on the north coast, opposite, whence passengers may find a speedy conveyance to Boston.

PILOT-

PILOTAGE.—By the Act for regulating the compensation to pilots, 1820, it is enacted, that any person who shall faithfully and skilfully pilot any vessel through the Vineyard Sound, over Nantucket Shoals, to her port of destination in Boston Bay, or eastward thereof, shall be entitled to receive the following rates of pilotage.—From the 1st of November until the 31st day of March, inclusive, for a vessel not drawing more than 11 feet of water, 3½ dollars per foot; if drawing over 11 and not more than 14 feet, 4 dollars per foot; if drawing over 14 feet, 4½ dollars per foot:—from the 1st day of April until the 31st day of October, inclusive, for a vessel not drawing more than 11 feet, 2½ dollars per foot; if drawing over 11 feet, and not more than 14 feet, 3 dollars per foot; if drawing over 14 feet, 3½ dollars per foot:—with an addition of five dollars if such person shall be landed at any place to the eastward of Cape Anne, and not eastward of Portsmouth; or of ten dollars if landed eastward of Portsmouth.

The provisions of this Act do not extend to any case where an agreement in writing shall be made between the master or owner of a vessel and the person who may undertake to act as pilot of such vessel, fixing any other rate of pilotage for such services: but nothing in the Act affects any law respecting pilotage previously in force.

NANTUCKET.—SAILING DIRECTIONS.—*If bound from the port of Chatham*, or the peninsula of Cape Cod, to the harbour of Nantucket, bring Chatham lights to bear N.N.W.; and, by steering S.S.E. 3½ leagues, you will cross the *Pollock Rip* in 3 and 4 fathoms of water, leaving the *red buoy* on that Rip to the westward. Here, if the weather be clear, you may see, respectively, the lighthouses on the Sandy Points of Monomoy and Nantucket. Bring the latter to bear S.W. ½ W. and then, with the lead going, steer for it, leaving the *white buoy* on the Little Round Shoal, on the larboard side. When you have advanced to about three miles from the lighthouse, steer W. ½ S. until you are past the *Point Rip*, known by its *red buoy*, when the lighthouse will bear South. Here you will come in sight of the lights which stand on the western side of the harbour, and toward which you will advance by steering S. by W. ½ W.

A VESSEL DIRECTLY FROM SEA, to the eastward, may approach the lighthouse on the N.E. point of Nantucket, by proceeding on the parallel of 41° 25′, to the southward of the *Great Round Shoal*, (the black buoy on which will be left on the starboard side,) and hauling round the Point Rip as above directed. Due allowance to be made, on approaching, for the set of the tide, which will be presently described.

NANTUCKET HARBOUR.—The passage into this harbour is between shoals on either side, which are regularly buoyed; and there are harbour-lights on the western side, which, when in a line, lead in from the outer buoy. Of these lights, the outer one is on *Brant's Point*, and the upper one on elevated ground at some distance from the shore. On entering, bring the south light and the light on Brant Point in one, until up to the outer buoy; the upper light should then be opened a handspike's length to the westward of this range, which will lead from the bar or outer buoy to the shoaling of water on Brant's Point.

If the upper lighthouse cannot be seen, bring the lower light on Brant Point to bear S. by E. and not to the southward of that bearing, and run for it until within about a cable's length; then run to the eastward for the end of the point, and pass it as near as you please.

With ordinary tides there are, on the Bar of Nantucket, about 8 feet at low water; neap-tides, 7 or 7½; and spring-tides, 9 to 9½ feet.

SAILING FROM NANTUCKET HARBOUR.—In proceeding to sea from Nantucket Harbour, the course from the bar towards the N.E. or Sandy Point lighthouse will be nearly N.N.E. With the tide setting westward run for the lighthouse, and pass the point at the distance of about two miles, leaving the *Point Rip* on the starboard side. Be cautious that a tide setting eastward does not drive you on the Rip. Keep the town of Sherburn or Nantucket open to the westward of the lighthouse on the Sandy Point until you are three miles to the N.N.E. of that point, when you will be in the fair *Ship Channel* for proceeding either eastward or westward. An E. by S. course will thence carry you to sea to the southward of the Great Round Shoal, the black buoy on which will be passed at the distance of 4 or 5 miles.

If, with a light wind and a southerly tide, there should be any risk of being set too near the *Great Rip*, which extends off Sancoty Head, as noticed in page 74, it will be advisable to run E. by N. or E.N.E., having previously doubled the Great Round Shoal; whence eastward there is nothing to fear.

TIDES.—The tides in the vicinity of and about Nantucket have been described as follows:—On the *South Shoal* of Nantucket the flood sets to the north about three hours; then E.S.E., when the ebb commences at South and continues till low water. At *Sancoty Head* the flood sets N.E. and the ebb S.W. In the *Middle* or *South Ship Channel* the flood sets N.E. by E. and the ebb S.W. by W.

On the south side of the *Pollock Rip*, in Butler's Hole, the flood sets East and the ebb West. From Chatham to Pollock Rip the flood sets S.S.W. and the ebb N.N.E.

From Butler's Hole westward to the Horse-shoe the ebb sets W.S.W., then W. by N. to Holmes's Hole.

At the Pollock Rip, Great Rip, Round Shoals, &c. the vertical rise of the tide is 5 and 6 feet. It is less on the shoals westward toward Martha's Vineyard, being there only 3 to 4 feet. A S.E. moon makes full sea in the Sound.

DIRECTIONS *for* SAILING *from the* EASTWARD *to* HOLMES'S HOLE.*

HOLMES'S HOLE.—*On proceeding for Holmes's Hole, from the eastward,* you haul around the Point Rip of Nantucket, according to the preceding directions. You may bring the lighthouse to bear E.S.E ½ E., and then steer W.N.W. ½ W., taking care to make your course good for Holmes's Hole light, a distance of 8 leagues. Upon this course, you will leave on your larboard side the light-vessel near Thuckanuck Shoal, and the lighthouse on Cape Poge, which must previously be brought to bear W. ¾ S., in order to clear the rip called the *Cross Rip*, on the N.E. part of which is a white buoy, in 15 feet of water, from which Cape Poge light bears W. by N. 2½ leagues, Thuckanuck Island S. ½ E. nearly 2 leagues, and a *red buoy*, on a shoal called *Squash Meadow Shoal*,† W.N.W. ¼ W. 10 miles. The least water on the Cross Rip is 12 feet.

TO SAIL TOWARDS HOLMES'S HOLE by the NORTH CHANNEL, bring Chatham lights to bear N.N.W., then steer S.S.E. about 3½ leagues, to pass the Pollock Rip, as before directed, in 3 or 4 fathoms, whence you steer W. ¼ S. 5 miles, for Butler's Hole, which has 15 fathoms of water. Here you will see a white buoy to the north, which lies on the *Snowdrift*, marking the *S.S.W. passage*. Next run W.S.W. for the south part of the *Handkerchief*, which has, on its eastern part, a *white buoy*, already noticed.‡ Crossing the Handkerchief on a W.S.W. course, in 3 or 4 fathoms, run west, about 11 miles, for the *black buoy* on the *Horse-shoe*, leaving it on the starboard hand. This course continued for 4 leagues, will lead to the lighthouse on the west chop of Holmes's Hole, already noticed. On entering the Swash in the Horse-shoe, the lighthouse on the east side of Hyannas Harbour will bear N.N.E.; Cape Poge light, W.S.W.; and Holmes's Hole light, West.

HYANNAS HARBOUR, &c.—POINT GAMMON, on the eastern side of Hyannas Harbour, is distinguished by a lighthouse of stone, painted white; the light is *fixed*, brilliant, and 70 feet above the sea.

Vessels from the eastward may pass into the North Channel, as already directed, and thence to the northward of the cluster of rocks, called the *Bishop and Clerks*, which are to be left on the larboard side, not approaching them nearer than in 4 fathoms. These rocks form a dangerous ledge; the greater part is always dry, and bears S. by E. 3 miles from the lighthouse. When the light bears N. by W., the course in is W.N.W., keeping in 4 fathoms till the light bears N.N.E., then steer N.W. or N.W. by N., and keeping in 3 fathoms will carry you clear of a dangerous reef, extending from the lighthouse to a great rock, which is to be left on the starboard side. When abreast of this rock, the light will bear S.E. ½ E. The course will now be N.N.W. to the anchorage, within one mile of the shore, in 3 fathoms, soft bottom. No vessel should approach nearer than three-quarters of a mile from the light, as there are sunken rocks at half a mile from land.

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* Directions for sailing in from the westward are given hereafter.

† *Squash Meadow Shoal* lies about 3¼ miles W.N.W. from Cape Poge, and to the southward of a straight line between Cape Poge and the east chop of Holmes's Hole. The lighthouse on *Nobsque Point*, which stands to the westward of Falmouth, kept open of the east chop, and bearing N.W. by W. ½ W. leads clear of it.

‡ Part of the Handkerchief is dry at low water.

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The N.W. rock of the Bishop and Clerks lies between two and three miles W. S.W. from Point Gammon lighthouse. It is a large square rock, having over it about three feet at low water. At this time it is not unlikely that its situation may be indicated by a buoy or beacon.

At the mouth of *Bass River*, about 4 miles to the eastward of Point Gammon light, is a new beacon, which will, of course, be seen by those approaching that shore.

Vessels bound from Hyannas to the westward, must run to the southward till the light bears E. by N.; a W. by S. course will then lead clear of the *South-west Rock*, which lies 4 miles west from the light, and has several sunken rocks near it. This S.W. Rock is dry at low water. At W. ¼ S. 8 miles from the light, is a dangerous ledge, distinguished by a beacon, and called *Culler's Ledge*, extending 3 miles from the shore. About this ledge are 3 fathoms of water, while the ledge is partly dry. In running the W. by S. course, the light bearing E. by N., you will have from 3 to 4 fathoms, and sometimes 5, the ground being ridgy. Towards the Horse-shoe, to the southward, are 4, 5, 6, 7, 10, and, close to the Horse-shoe, 13, fathoms. The northern part of the Horse-shoe is dry at low water. On the swash of the Horse-shoe is the *black buoy*, already noticed, which lies in 16 feet of water, with Nantucket light bearing S.E. by E. 4½ leagues; Thuckanuck light-vessel S.E. ¼ S., 3 leagues; and Cape Poge lighthouse S.W. by W., 2½ leagues.

The tide hereabout rises about 5 feet: the time of high water, on the full and change, is 12 h. The stream runs from 2 to 3 miles east and west, as follows: it begins to run to the westward at half-flood, and so continues to half-ebb; then it runs to the eastward in the last three hours of ebb, and first three of the flood.

In proceeding towards Holmes's Hole, in the channel between the Horse-shoe and the bank to the west, called the *Hedge-fence* (hereafter described) you may find to the northward of the Horse-shoe 10 fathoms of water, at one mile distant from the spots in the latter which are dry at low water. The distance hence to Holmes's Hole is 3¼ leagues, and the courses vary from S.W. by W. to W.N.W. ½ W. Passing a black buoy on the east end of the Hedge-fence, upon the starboard side, the latter course, W.N.W., will lead along that shoal in the direction of Nobsque lighthouse, until the lighthouse on the west chop of Holmes's Hole bears S.W. by W., when you may haul in for the harbour.

Or, if bound outward from Vineyard Sound, you may proceed toward Nobsque lighthouse to the distance of half a mile, and thence, with the Elizabeth Isles on board, upon a course S.W. by W. ½ W., observing only the precautions given hereafter to vessels entering from the westward. The distance from Nobsque lighthouse to that of Tarpaulin Cove, on Nashon, is two leagues; and from the latter to that of *Cuttahunk*, at the western extremity of the Sound, about 3½ leagues. (*For description of the lights, see page* 72.)

SOUTH SHOAL *of* NANTUCKET *to* VINEYARD SOUND, HOLMES'S HOLE, EDGARTOWN, *&c.*

GAY HEAD, the westernmost point of Martha's Vineyard, in latitude 40° 20¼′, longitude 70° 52′, is distinguished by the lighthouse, with revolving lights, already noticed, (page 72). The land of this head is high, and of various colours, appearing red, yellow, and white, in streaks: it forms the south side of the entrance into Vineyard Sound, the north side of which is formed by the ELIZABETH ISLES: at the western extremity of the latter is the ledge of rocks called the *Sow and Pigs*, which is very dangerous.

At nearly two leagues to the southward of Gay Head is an islet called *Noman's Land*, which serves as a beacon to those approaching the western part of Martha's Vineyard. There is a passage between it and the latter, but it is impeded by a dangerous ledge of rocks, called the *Old Man*, lying nearly in mid-channel, with Gay Head lighthouse N. ¼ W. 4 miles distant.

From the intersection of latitude 41° 0′, and longitude 70° 0′, which is about two leagues to the S.W. of the *South Shoal* of Nantucket, the bearing and distance to Noman's Land are N.W. by W. ½ W. 13 leagues. From the same spot to the *Eastern Swash*

Swash or Channel of Martha's Vineyard the bearing and distance are N.W. ¾ N. 8½ leagues. A vessel driven by stress of weather towards the latter may pass through it by bringing Cape Poge lighthouse to bear N. by W., and steering directly for it, which will lead clear through in 3 or 4 fathoms, leaving Muskeget Isle at about two miles on the starboard, and a sandy islet, called *Skift's Isle*, at half a league on the larboard, side. You then round Cape Poge, and may thence take the harbour of Edgartown or proceed westward as heretofore directed.

Should a vessel be driven toward *Squibnocket Point*, (the southernmost point of Martha's Vineyard,) she may, with an easterly wind, pass on either side of the *Old Man*, above described, but the safest passage is between the Old Man and the north shore, in 3½ or 4 fathoms, continuing N.N.W., along the beach, up to Gay Head light. With an ebb-tide you may anchor in 5 fathoms, the light bearing from North to N.E. Within Gay Head, to the eastward, is a fair sandy bay, having from 5 to 10 fathoms, and in which is good anchoring with South and South-easterly winds.

VINEYARD SOUND.—The *Sow and Pigs*, a ledge of rocks, some above and some under water, bear N.W. by W. 2½ leagues from Gay Head, and extend 2½ miles from Cuttahunk, the westernmost of the Elizabeth Isles, now distinguished by the lighthouse noticed in page 72. The first of the flood sets strongly over them to the northward, into Buzzard's Bay, the ground of which is very foul. The course in, along the Elizabeth Isles, is E.N.E. in 15, 14, 12, 8, 15, 16, and 17, fathoms of water, giving the isles a berth of about three-quarters of a mile, and passing Tarpaulin and Nobsque lights, as shown in the preceding page.

On running from the Gay Head light into Vineyard Sound, if requisite to make a harbour on the north side, bring Gay Head light to bear S.W., and run N.E. 3 leagues, which will carry you up to Tarpaulin Cove light, (noticed on page 72,) where you may anchor in from 18 to 4 fathoms: in the deeper water is fine sand, with the light bearing from W. by N. to S.W. On entering the Sound, with a southerly wind, the south channel is, of course, the best.

On advancing from sea, you may run for Gay Head light, when it bears from N.N.E. to E.S.E., giving it a berth of two miles, in order to clear the *Devil's Bridge*, which bears from the light N.W. by N. one mile and a quarter distant. As measuring the distance in the night may be uncertain, you must keep the lead going, and if 7 or 8 fathoms should be found when the light bears S.E. by E. or S.E., haul up to the northward until you have gained 10 or 12 fathoms: then, with flood, steer N.E.; and, with ebb, N.E. by E. nearly 3 leagues: E.N.E. will thence be the course of the sound, to the northward of the *Middle Ground*, a bank, on which the shoalest water, towards the eastward, is two feet.* When the lighthouse on the west chop of *Holmes's Hole* is in sight, run for it, keeping one mile distant from the shore until you have the east chop one cable's length open. With a flood-tide, steer directly for it; and, with ebb, keep it one point open, till you open a windmill, on the west side of the harbour, about one cable's length: now run up in the middle of the river, till you come to 4 or 3 fathoms, where you may anchor on good ground. The usual anchoring mark is the west chop, bearing from N.N.W. to N.W. by N.; but, for those who may remain any time, the best anchoring is well up the harbour, close to the shore, mooring S.E. and N.W. in 4 or 5 fathoms. In this harbour, which is about two miles deep, a vessel is secured from every wind, except a northerly one.

To the north-eastward of Holmes's Hole is the shoal called the *Hedge-fence*, on the eastern part of which is a black buoy.† The west end of the Hedge-fence is about 3 miles N.E. by N. from Holmes's Hole light, and the bank thence extends E.S.E. 5 miles: it is about half a mile broad, and has 4 feet of water on its shoalest part. Between this shoal and Holmes's Hole the depths are from 8 to 12 fathoms. Observe that, if you make the chop in the night, you will be clear of the Middle Ground when the light bears S.E. Steer for the east side of the chop till you strike in 4 or 3 fathoms

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* On the east end of the Middle Ground is a black buoy, in 16 feet of water, bearing from Tarpaulin Cove light East 2½ leagues, with the light on the west chop of Holmes's Hole S.E. by E. half a mile; and a black buoy on the eastern part of the bank, called the *Hedge Fence*, E. ¼ S. 2½ leagues.

† The buoy lies in 16 feet, bearing from the west chop, East 6 miles, and from the black buoy on the Middle Ground E. ¼ S. 2½ leagues.

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on the flat ground near it; then steer S.E. by E., observing not to go nearer the land than in 3 fathoms. If, in running S.E. by E., you fall into 6 or 7 fathoms, haul up S. by W. or S. S.W., and run into 4 or 3 fathoms, as already directed.

In the night, on approaching the Sound, with a strong north-westerly wind, haul to the northward, until you find smooth water under the Elizabeth Islands, where you may anchor in from 14 to 10 fathoms. Should the wind be to the southward, it will be best to run down through the south channel, or Vineyard side. When Gay Head bears S.S.E. the course will be N.E. by E. ½ E. or E.N.E., observing not to approach the land nearer than into 7 fathoms, until abreast of *Lumbert's Cove*, in which is good anchorage with southerly and easterly winds. This place may be known by a high sand-bank, called *Necunkey Cliff*, on its eastern side. In the middle of the cove you may come-to, in from 5 to 3 fathoms, sandy bottom, which is the best ground. The Middle Ground lies about two miles without the cove, and has, in this part, 12 feet over it.

If, when opposite Necunkey Point, you intend to run for Holmes's Hole, the course will be E. by N., keeping near the land, so as to clear the Middle Ground.* You may track the shore by the lead, in from 7 to 4 fathoms, till you come near the light-house: but approach no nearer than 3 fathoms, and you may track around the chop, in the same manner as when running down from the north side of the Middle Ground. There is good anchoring along shore, in 6 or 4 fathoms, after passing to the eastward of Necunkey Point, till you come near the west chop.

Tarpaulin Cove, and thence to Holmes's Hole.—The direct course from Gay Head Light to Tarpaulin Cove light is N.E. by N., and the distance 3 leagues. In the cove you may anchor in from 4 to 2½ fathoms, and lie safely with the wind between N.E. by E. and South. It will be best to anchor in 3 fathoms, as in that depth you will be out of the tide, where the ground is good for holding.

Nobsque Lighthouse.—Since the preceding directions were written, the lighthouse on Nobsque Point, westward of the town of Falmouth, has tended to facilitate, in a material degree, the navigation of the Vineyard Sound, both to the eastward and westward. Its lights, which are fixed, were first exhibited on the 10th of November, 1828. The lighthouse stands near the eastern extremity of the passage called *Wood's Hole*, and its proper line of direction, for vessels entering, along the Elizabeth Isles, is N.E. by E. ½ E. Having advanced to the east end of the Middle Ground, by keeping Nobsque light open of the east chop of Holmes's Hole, vessels will clear the shoals called the Old Town Flats, &c., and may thence proceed as hereafter directed.†

The Tide.—The tide hereabout, on the full and change days, flows at 9 h. In the channel, between Elizabeth Isles and Martha's Vineyard, the flood, however, runs until 11 o'clock.

EDGARTOWN.—The harbour of Edgartown, which is two leagues to the south-eastward of Holmes's Hole, is the best harbour of Martha's Vineyard. It is a port of entry. The harbour is formed by the eastern part of Martha's Vineyard and the western part of the Isle Chapoquidick, therefore to the west of Cape Poge lighthouse, and is bounded by shoals on each side. The tide runs in strongly, but there is excellent anchorage. The town is situate on the western side, up the harbour.

A pier has been erected at the entrance of the harbour, and a lighthouse placed thereon, which was first lighted on the 15th October, 1828.

Vessels bound eastward and intending to enter Edgartown Harbour, from the east end of Squash Meadow Shoal, in 3 fathoms of water, should bring the harbour-light to bear South, and Cape Poge light S.E.; then steer S.S.E., and they will pass the Long Flat in 4 fathoms of water, until the harbour-light bears S.W. by S.: then steering S.S.W.

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* The Middle Ground is a narrow shoal; on its eastern end is the black buoy already noticed, which bears East, 6 miles from the west chop of Holmes's Hole. To the N.W., from Necunkey Cliff, there are 3 and 4 fathoms over it. Opposite Lumbert's Cove 12 feet, and to the westward of that 3 and 4 fathoms; it has several swashes.

† The bearings from the lighthouse, according to the *official notice*, are, the West Chop lighthouse of Holmes's Hole S.E. ¼ S. 4 miles: East end of the Middle Ground S.E. ¾ S. 3½ miles: West end of the same S.W. by S. 4 miles: Gay Head lighthouse S.W. ¼ W. 15 miles: Tarpaulin Cove light-house W.S.W. 6 miles: Falmouth Wharf N.E. by E. 3 miles: Sucannuset Point E. ¾ N. 7 miles: S.W. part of the Hedge-fence E.S.E. 4 miles: Cape Poge lighthouse S.E. ¼ E. 14 miles: East Chop of Holmes's Hole S.E. 6 miles.

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they will have 6 and 6½ fathoms of water until the harbour-light bears West. Next steer W. by S. and pass the light at about a cable's length to the right or starboard hand, which courses will carry them up to the wharfs.

Vessels bound westward, and having to enter Edgartown Harbour, after passing near Cape Poge in 4 or 5 fathoms of water, should bring the harbour-light to bear S.W. by S. and steer S. S.W. until the harbour-light bears West; then steer W. by S. and pass the light at about a cable's length to the starboard or right hand, which courses will carry them up to the wharfs.

If vessels have to anchor in the outer harbour, they will follow the above directions until the harbour-light bears W. by S. and Cape Poge light bears N.E. ½ E., when they may anchor in 4½ or 5 fathoms of water, and very good holding ground.

Holmes's Hole, eastward, to Nantucket Light and Cape Cod.

In order to pass over the shoals, on leaving Holmes's Hole, keep the lighthouse on the west chop open to the northward of the east chop, until you have passed Squash Meadow Shoal, having a red buoy with a pole, on the N.W. end, which has already been noticed. (See page 77.) The shoalest water is 5 feet. The buoy, which lies about 2½ miles from the east chop, must be left on the starboard side, whence the course will be E. by S. in 10 or 12 fathoms; and this course is to be continued until you passed Cape Poge lighthouse. With flood-tide you must steer E.S.E. ½ E., as it sets very strong to the northward between Cape Poge and Thuckanuck Island. The tide of ebb, likewise, sets to the southward, and for this a proper allowance must be made.

In clear weather you may see Nantucket lighthouse at the distance of 18 miles. Bring it to bear E.S.E. ½ E., and steer this course, so as to pass it at the distance of a league, whence you must bring it to bear west, and steer east, taking care to make this course good, which will lead over the shoals in the Ship or South Channel. Here the ground will be found very uneven, and the depths from 4 to 8 fathoms. When over the shoals you will have from 10 to 14 fathoms, and then may proceed north, towards Cape Cod lighthouse, which will be distant about 15 leagues.

Or, a vessel may proceed outward, through the channel between the Great and Little Round Shoals, (*described in pages* 74, 75,) leaving the black buoy upon the Great Round Shoal upon the starboard hand. In proceeding thus, pass the lighthouse, as already directed, and bring it to bear S.W. ½ W.; then, by making good a N.E. ½ E. course, you will pass between the Great and Little Round Shoals. The latter having a *white buoy*, with a small pole on its south side, is to be left on the larboard hand. This buoy is 2½ miles N.W. by N. from the black buoy on the Great Round Shoal. You pass between the Great and Little Round Shoals, in 2½, 3, 4, and 5, fathoms, until you have crossed the Pollock Rip, known by its red buoy, in about 3 or 4 fathoms,* leaving the buoy on the larboard hand. The course, N.E. ½ E., is to be continued until the water deepens to 12 or 13 fathoms; whence a northerly course, if requisite, may be taken.

NEW BEDFORD, &c.—*The best way to New Bedford*, even to vessels from the westward, is through *Quick's Hole*, a channel between two of Elizabeth's Isles named *Nashawina* and *Pasque*. These are the second and third of the larger isles from the westward. The harbour of New Bedford is on the western side of Buzzard's Bay; and Clark's Point, the western point of the entrance, is distinguished by a lighthouse, exhibiting a *fixed* light, at 100 feet above the level of the sea.

The directions are, to bring Gay-Head light to bear S. ½ W., and steering N. ½ E. to the passage through the islands, named Quick's Hole, which should be entered as near the middle as possible, or keeping rather to the starboard side, so as to avoid a spit or flat, which extends from the S.E. point of Nashawina, on the larboard. Proceeding thus, you will have from 5 to 6 fathoms, and should then haul in, keeping the larboard side best on board, and following, in some degree, the bend of the shore. Keep Gay-Head light about a ship's length open by the S.E. point of Nashawina, till you are at least one mile north of the Hole, and this will carry you to the eastward of a ledge and rock which lie at that distance from it, with only 5 to 12 feet of water on them, with a good

* See the directions for sailing inward, pages 74, 75.

channel to the westward, and 5 fathoms all round. Next steer N. ½ W. till you strike hard bottom in 5 fathoms, on the S.E. corner of the *Great Ledge*, which is on the western side of the channel; then, N.E. by N. about three-quarters of a mile, till in 5½ or 6 fathoms, sucky bottom, when the light on Clark's Point will bear N. by W., towards which you advance, and run into the river.

Off a point called *Round Hill Point*, at two leagues N.N.W. ½ W. from the outlet of Quick's Hole, is a cluster of rocks called the *Dumplings*, upon which a lighthouse was erected in the year 1828. From this lighthouse that on Clark's Point bears N.N.E., 4 miles distant. It will, therefore, be seen, on proceeding upon a *direct* course from Quick's Hole to New Bedford, at the distance of between two and three miles; and when it bears West, Clark's Point will be about four miles distant.*

From the Dumpling lighthouse, Wood's Hole, the passage leading to Nobsque Point, bears E. by S. 10½ miles distant; Penequese or Pune Island S. ½ W., 5 miles; Cuttahunk lighthouse S. by W. ¾ W., 7½ miles; the Sow and Pigs S.S.W., 8¼ miles; and Mishom Point S.W. ½ W., two miles.*

After passing Clark's Point light, you will see a small island, called *Outer Egg Island*, just above water. This is to be left on the starboard side, giving it such a berth as to avoid some rocks stretching south-westerly from it, about one-third of a mile, but still keeping nearer to it than to the main land, and so as to avoid *Butler's Flat*, which extends from the western shore. To steer clear of the latter, keep the lighthouse a ship's length open to the westward of the *Round Hills*. So soon as you open the north line of the woods, with the clear land, at about a mile north of the lighthouse, you are to the northward of the flat, and may steer direct, either for the hollow or the high part of *Palmer's Island*, in the river, hauling a little to the eastward as you approach it. The passage between this island and Fort Point, on the starboard side, is narrow. A flat extends outward, S.W. from the point, which renders it necessary to keep nearest to the island as you draw towards the north end of the island, give it a berth of two ships' length, as a small flat stretches to the east from its N.E. point. So soon as you have passed to a cable's length above the island, the town of New Bedford will open to the N.W. when you may run for the most projecting wharf (*Rotch's*); or, to anchor in the deepest water, bring the lighthouse on Clark's Point in a line without Palmer's Island.

BUZZARD'S BAY.—*Ships from the westward, if bound for New Bedford*, will find the eastward the safest channel, and may proceed as above directed; but, if circumstances render it more convenient, you may proceed to the northward of the Elizabeth Isles, by first giving the *Sow and Pigs*, at the S.W. end of those isles, a berth of about one mile, and run N.E. by N., with the Dumpling lighthouse in this direction, till Pune or Penequese Island bears S.E.: then steer E.N.E. till Gay-Head light bears South; and thence N. ½ W. till you strike hard bottom in 5 fathoms, on the S.E. corner of the *Great Ledge*; and so on, as before directed.

It is to be noticed, that a rock lies off the north end of Pune or Penequese, about one mile, which has only 8 feet over it at low water: between this and a ledge called

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* We give the preceding bearings and distances from Captain Holland's unfinished Survey of Buzzard's Bay, &c. which he has represented on a scale of more than half an inch to the mile, and cannot help expressing our surprise at the extraordinary differences between these and those given in the *Official Notice* of the lighthouse, under the authority of Captain *Seth Daggett*. The latter gives Clark's Point lighthouse, from the Dumplin light as N.N.E. 5 (~~not 4~~) miles; Quick's Hole S. by E. ½ E. 12 miles (not S.S.E. ½ E. 6 miles); Wood's Hole E. by S. 15 (not ~~10½~~) miles; Pune Island S. by W. 10 miles (not S. ½ W. 5 miles); Cuttahunk lighthouse S.S.W. 19 miles (not S. by W. ¾ W. 7½); the Sow and Pigs S.S.W. ¾ W. 14 miles (not S.S.W. 8¼ miles); Mishom Point, the same as above, S.W. ½ W. two miles.

Besides the above, the following are also given; which, it may be presumed, are nearer to the truth, though we have not the means of determining, from want of a good chart:—the *White Rock* N. ½ E.; a buoy on the *Middle Ledge (red)* N.N.E. ½ E. 2½ miles; a buoy on the *North Ledge (yellow)* N.E. ½ E. 3 miles; a buoy on the *Great Ledge (white)* E. ½ S. two miles; buoy on *Wilkes's Ledge (black)* S. by E. ½ E. 2½ miles.

The mere indication of these dangers is, however, useful, more especially as they are buoyed. On the centre of the small ledge, called the *Middle Ledge*, is a red buoy in very shoal water; on the S.E. part of the *North Ledge* is a yellow buoy; on the S.E. part of the *Great Ledge* is a white buoy, in 3 fathoms; and on the S.W. part of *Wilkes's Ledge* is a black buoy, in 2½ fathoms. In sailing up, toward New Bedford, all these buoys are to be left on the west or larboard side. In the winter they are taken up.

Wilkes's

Wilkes's Ledge, having a *black buoy*, is an open channel, free from danger; and the courses may, therefore, be varied according to circumstances.

Those acquainted with Buzzard's Bay commonly use the western channel; giving the *Old Cock* and *Hen* and *Chicken*, on the western side of the entrance, a sufficient berth. A league and a half to the north-eastward of these is Mishom Point; and two miles N.E. ½ E. from Mishom Point, is the cluster of rocks, above water, called the *Dumpling Rocks*, which lie off Roundhill Point, and are now distinguished by the *lighthouse*, which has been described. The only danger to be avoided is on approaching *Mishom Point*, as a rock lies about one mile S.W. by S. from it, having over it only 6 feet of water: there is, also, a ledge directly south of the point, at the distance of a mile, on which there are not more than 3 fathoms, with common ebbs.

Having passed Mishom Point, you may steer directly for the Dumpling lighthouse, off the Round Hills, and pass to the eastward, at the distance of two cables' length. The direct course hence to Clark's Point is N.N.E.; but, to avoid the *Middle Ledge*, on which is a *red buoy*, and which lies nearly on the direct course, it is better to steer N.E. by N. about a mile, and then haul up N.N.E., as thus you will leave the ledge on the larbboard hand. You may also carry in 4 fathoms to the westward of the ledge; but the channel between it and the *Lone Rock*, which lies N.W. from it, is narrow.

RHODE ISLAND TO BUZZARD'S BAY.—From Seaconnet Rocks, on the eastern side of the East Passage of Rhode Island, giving them the berth of a mile, the course to the entrance of Buzzard's Bay is E. ½ S. By this course made good, all the danger of the *Hen and Chicken*, above-mentioned, will be avoided. The soundings, generally, will be 9 to 7 fathoms, mostly hard bottom, till the sea deepens to 16 fathoms, softer ground, when Cuttahunk lighthouse will be upwards of a mile distant, and Clark's Point light will bear N.N.E. You may now run directly for the light till up with the Dumpling Rocks, to which a sufficient berth must be given. Or, you may stand on this course of N.N.E. till in 7 fathoms, soft bottom, which will be between Mishom Point and the Round Hills, and come to an anchor. Or, otherwise, steer N.N.E. till Pune or Penequese Isle bears S.E., and then E.N.E. for the Quick's Hole Channel, and proceed thence as already directed.

Should it happen, when you have stood in from Seaconnet Point towards Cuttahunk, that the light on the Dumplings, or that on Clark's Point, is not to be seen, but that Gay-Head light is in sight, you may stand on your course E. ½ S. till you shut it in behind the west end of Cuttahunk, but must then immediately change your course to N.N.E. If neither light is to be seen, the soundings will be the only guide, and must be especially attended to.

DANGERS AND OTHER PARTICULARS OF BUZZARD'S BAY.

To the S.E. of the Dumpling Rock lighthouse, from one-half to three-quarters of a mile distant, is a *sand-spit*, of only 7 feet of water. Between it and the rocks are 5 fathoms.

Lone Rock, N.W. of the Middle Ledge, nearly half a mile, is nearly, if not quite, dry at low water. There are 2½ fathoms around it. Between this rock and the *Hussey Rock* is the entrance to Aponeganset River. Depth of water in the channel 3½ fathoms. There is, also, a channel between the Hussey Rock and White Rock. The course from Quick's Hole to the entrance of Aponeganset River is N.N.W., leaving the Dumpling lighthouse on the west or larboard side.

The *White Rock*, N. ½ E. from the Dumpling light, is of considerable height above water, and the two rocks to westward of it, called the *Ragged Rocks*, are always to be seen.

A *small rock* to the S.W. of the North Ledge, (about one mile from its buoy,) with only 7 feet over it, and another *small rock*, to the N.E. of the same ledge, (about half a mile from the buoy,) with 10 feet over it. Both were discovered by a Captain Mosher: on the first, he struck with the brig Commodore Decatur; and on the latter, with the brig Elizabeth.

The *Packet Rock*, a small sunken rock, of 4 feet of water, lies half a mile, or upwards, W. by N. from Black Rock. The passage for coasting vessels, bound from New Bedford up the bay, is between this and Black Rock.

West's

West's Island Ledge is 6 miles W.N.W. from the Dumpling lighthouse. A large white buoy is placed over it, in 2 fathoms.

The *soundings* across the western entrance of Buzzard's Bay, between the Sow and Pigs on one side, and the Hen and Chicken on the other, and to some distance within, are very irregular, varying from 5 to 10 and 15 fathoms; the bottom generally hard.

The Tide.—A S.E. moon makes high water in the bay; and the average set of the stream hourly is one mile and a half.

BIRD ISLAND LIGHTHOUSE.—Bird Island is near the N.W. shore of Buzzard's Bay, 8 miles N.E. ½ E. from the south point of West's Island, and near the mouth of Sippigan, or Rochester Harbour; it lies half a mile south from the Great Neck, or eastern chop of the same. It is very small, not containing more than three acres of land, and is about five feet above the level of the sea.

The light and dwelling-houses are of stone, and white-washed. The light-tower is 25 feet high, and has a lantern of 7 feet, lighted with ten patent lamps, with a 16-inch reflector to each, fitted on two sides of an oblong square, which, seen at a distance of five leagues, appears to revolve once in 3½ minutes. The time of total darkness is equal to twice that of light. On approaching, the time of total darkness decreases, until within two miles of it, when there will be no *total* darkness; but the greatest strength of light will be as forty to one over that of the least light, in the course of each revolution.

From Bird's Island lighthouse the north end of Quick's Hole, between Nashawina and Pasqui, bears S.W. by S. 15 miles; that of Wood's Hole South, 9 miles; and the entrance of *Monument River*, at the head of the bay, N.E. by E. ½ E. six miles.

PASSAGE TOWARD RHODE ISLAND, LONG ISLAND, &c.

We have already given, in pages 4 and 5, the general temperatures of the GULF STREAM, as they have been found between the meridians of 60° and 75° W.; and we recommend to the mariner bound to Nantucket, Rhode Island, Long Island, or New York, a re-perusal of that description; comparing it, at the same time, with our late edition of the chart of the Atlantic. From this, on inspection, it will be clear that the proper track toward Block Island, Long Island, and New York, is between the Shoal Grounds of George's Bank and of Nantucket on the one side, and the northern edge of the Gulf Stream on the other. It will not be prudent to pass to the northward of latitude 40° 40′, when approaching the southern shoals of Nantucket, which lie as already described (page 73), a little to the eastward of the meridian of 70°, with the southern extremity near the parallel of 41° N.

It is hardly necessary to repeat, in addition to what has been said in page 2, that the existence of the Stream may always be ascertained by the relative temperature of the water; it being invariably warmer than the water without it, on either side, as may readily be ascertained by the thermometer. Of this we have given many examples in a former work, and have only now to observe that the differences between the oceanic temperature and that of the Stream frequently amount to ten and twelve degrees; while, in *winter*, the temperature of the Stream has exceeded that of the atmosphere to a much greater amount.

The following remarks on the Stream were made by Sir Philip Broke, on the approach of winter, in October and November, 1811.

"During six weeks in October and November, 1811; three weeks within its influence, either crossing it between the parallels of 38° 30′ and 40° 30′, and longitude 60° to 63° by *observation*. Mostly continued blowing weather from N.W., S.W., or South. The current, irregular in velocity, but constantly to the E.S.E.: never less than 25 or 30 miles, and several times 50, in the twenty-four hours: always seen by *gulf-weed*.

"My chronometer was, at first, very correct, as we had opportunities of ascertaining by *lunar* observations: but I soon found, both from our own observations and the report of my brother officers, that the best chronometers became irregular in the *heavy warm damp air*, over the stream; the thermometer standing at summer heat, and once at 80°, whilst it stood near the *freezing* point beyond its borders, as well to the south as the north.

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"When the wind opposed the current, the sea was always heavy and broken, so as to occasion the ship to labour much under any trim of sail whatever."

These observations were confirmed in after cruises.

Sir Philip adds, "Those who have no reason for navigating in this stream, should always avoid it in the winter season; as the sea which then prevails is unusually heavy and irregular; the climate warm, squally, wet, and unsettled. During S.W. or West gales the air is sultry hot, even in the winter; and the latitudes of 39° and 40°, when just beyond its influence, the weather is extremely cold.

"Between the latitudes of 38° and 40°, longitudes 56° and 64°, I have known cruisers thrown out of their reckoning nine degrees of longitude in ten or eleven days by this current."—*Major Rennell's Investigation*, p. 180, 181.

In addition to the above, we now give remarks on the stream, between the meridians of 61° and 66°, in the months of *May* and *October*, which have been obligingly communicated by *Mr. Edw. Sabben*, Master of H.M. Ship *Niemen*, in 1823.

"1st *May*, 1823; H.M.S. *Niemen*, Captain E. N. Sibly.—From 2 p.m. of April 30, being then in lat. 41° 40′ and long. 63° 30′, to 10 *a.m.* of May the 1st, when in lat. 40° 30′ and long. 63° 10′, felt the influence of a current, which, by repeated observations, appeared to set S. 72° E., or nearly E.S.E. ½ E., one mile and nine-tenths an hour. On the 3rd, at 6 p.m., in latitude 39° 10′, and long 65° 55′, the ship was in the middle of the Gulf Stream. At 6 p.m., on the next day, its southern edge was passed in latitude 38° and long. 64° 30′. The ship had now been set by the stream one degree and thirteen minutes due east, giving its velocity 2·3 miles per hour. The temperature of the water, at two *p.m.* was 77°; at 3h. 15m. p.m. 76°; at 5h. 50m. p.m. 72°; and at 7 p.m. the same.

"Again, May 23rd, at 10 p.m. latitude, per account, 38°, and long. 65°, entered the Gulf Stream, having previously found an *eddy setting westward*, and extending about 15 miles south of the stream. May 24, at 9h. 30m. p.m. the ship was in lat. 40° and long. 61° 50′, and the current was then found to have set, during nine hours of the day, while accurate observations could be gotten, due east, more than 3 miles per hour.

"Crossing the Stream, in October, 1822, during favourable weather, between 38° and 39½° N. and in longitude 63°, it was found setting S. 68° E. (nearly E S.E.) 2·3 miles an hour, with an *eddy on its southern edge*, perhaps from 10 to 15 miles wide, running with about half that velocity."

With northerly winds, on the 11th of *March*, 1816, Captain Carlton, in the American ship *Grand Turk*, latitude 39° 8′, longitude 61° 36′, found the temperature of the air 44°, and of the water 68°. On the next day, in 39° 36′, and 59° 3′, the air was 46°, the water 66°, a difference of 20 degrees.

On the 15th of March the ship had advanced to the S. S.W. of the Newfoundland Bank, in latitude 40° 42′, longitude 52° 47′; when it became remarkable that the temperature of the air was 64°, while that of the water had dropped to 59½°. On the next day, at half a degree from the southern edge of the Bank, in 42° N. and 49° 51′ W., the air was 56°, the water only 43°. Here the temperature was evidently lowered by an admixture of the Arctic waters from the North or N.N.E.*

BLOCK ISLAND, &c.—It is to be recollected that, when approaching the south shoal of Nantucket, which lies as already described, the tide here runs swiftly, but regularly, to the N.E. and S.W. Near the shoal, to the southward, in 25 or 30 fathoms, there is fine black and white sand; to the eastward, in the same depth, there are coarse sand, shells, and gravel. Near the shoal the water appears very light-coloured, the bottom being of black and white sand, with pieces of green shells. Nine leagues to the westward of the shoal, in between 30 and 40 fathoms, there is black mud, of a smooth and shining quality, and here lies the *Thuckanuck Channel.*

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* In the month of June and beginning of July, and sometimes later, the ices from the Arctic Seas are frequently coming down from the northward in dangerous masses. In the same season the fishing vessels are very numerous upon the Bank, on and about the parallel of 45° N.; consequently, vessels bound to the eastward, from Nova-Scotia, &c. will avoid both, and most safely cross the Grand Bank, at this time of the year, by keeping in, or not proceeding to the northward of, latitude 44°.—(*Captain Chas. Hare.*)

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In approaching the south side of Block Island, from the southward, the water shoalens gradually. When the island bears from N.W. to N. by W., the bottom is mud: this is commonly called Block Island Channel. This island appears high and round as you come from the southward: and, if from the S.E., it looks like a saddle, low in the middle, and high at each end, though highest to the southward. Your course from Block Island to Gay Head is nearly E.N.E., and the distance 12 leagues.

With Block Island bearing North, 4 or 5 leagues distant, you cannot see any land to the northward or eastward; but, on approaching the island, you will see Montuck Point, the eastern point of Long Island, with its lighthouse, to the westward, making as a long low point.

In sailing to the W.S.W. you will make no remarkable land on Long Island, as its broken land appears at a distance like islands. You will have 20 or 22 fathoms out of sight of land, sandy bottom in some, and clay in other, places.

The Charts will be the best guide for soundings. To the southward of Noman's Island, near Martha's Vineyard, there is coarse sand, like gravel-stones, in 20 and 25 fathoms; and S.S.W. from it, in 28 or 30 fathoms, coarse red sand. S.S.E. from Block Island, in what is termed *Block Island Channel*, there are 30 and 40 fathoms, with oazy bottom: but, shoaling the water to 25 or 20 fathoms, you will find coarse sand.

From the south-end of Block Island to Gay Head, distinguished by the lighthouse already described, (page 72,) the bearing and distance are E.N.E. 13 leagues. From the same end of Block Island to the lighthouse at the entrance of Rhode Island Harbour, the bearing and distance are N.N.E. ½ E. 8 leagues.

RHODE ISLAND HARBOUR, &c.—The south end of Conanicut Island, called the *Beaver's-Tail*, forms the western point or chop of Rhode Island Harbour: on this point, at about 12 feet above the surface of the sea at high water, is a *lighthouse*, of which the height, from the ground to the top of the cornice, is 50 feet; above this is a gallery, and within that the lantern, about 11 feet high and 8 in diameter, containing a *fixed* light.

About two leagues to the south-westward from the Beaver's-Tail lighthouse is another lighthouse, on Point Judith, which is built of stone, having been re-constructed in 1816. Its lantern is 58 feet above the sea, and contains a *revolving light*, so that it cannot be mistaken for the Beaver Tail or Newport Light. The last bears from it N.E. by E. two leagues.

From the S.E. point of Block Island to Rhode Island lighthouse, on the south end of Conanicut Island, the course and distance are N.N.E. ½ E. 8 leagues: about midway between are 24 fathoms of water, the greatest depth, either to the northward or southward, on the course above given.

From a quarter of a mile without Point Judith to the entrance of Rhode Island Harbour, the course and distance are N.E. ½ E. 7 miles.

The mouth of RHODE ISLAND HARBOUR, between Rhode Island on the east, and Conanicut Island on the west, is one mile and a half broad. On the western side is the *Newtown Rock*, which is a sunken rock, about 200 yards south from the lighthouse: on the eastern side is *Brenton's Ledge*, extending nearly three-quarters of a mile out to the S.S.W.; and there are other rocks near the shore on the same side.* Upon the western side, off the Fort point, at about 3 miles above the lighthouse, are the *Dumplings*, a cluster of rocks above water, and from which the town of NEWPORT bears due east.

Before the town is *Goat Island*, with its fort, and having a shoal spit from each end, the extremities of which are buoyed. Brenton's Point, with the south end of this island, form the south passage into Newport. The course up the harbour, in mid-channel, is nearly N.E. 3 miles, leaving the Dumplings on the larboard side; thence East and E. by S. to the anchorage before Newport. In going up, take care to avoid the rocks near Castle Point, on the eastern side, some of which are above water. The best anchorage within, off Newport, is nearer to the Goat Island side than to that of Rhode Island, as the other parts of the harbour are grassy, and therefore apt to choke the anchors.

On the north end of Goat Island there is now a fixed light. Since this was established

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* See the particular plan of the harbour, on the Chart of the Coasts from Halifax to Philadelphia, or on that from Cape Cod to the Havanna.

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the directions are as follow:—In coming from the eastward, to clear Brenton's Reef, bring the Beaver-tail light to bear W.N.W. Run for it until Goat Island light can be seen from the deck. The latter will then bear N.E. ¼ E. Run for this light until it bears East, (or, continue your course until it bears E.S.E.) at the same time keeping Beaver-tail light bearing S.W. by W. in 7 to 9 fathoms, good ground.

In coming from the West, for Newport, after passing Point Judith, with its revolving light, steer N.E. by N. until you draw up with Beaver-tail light, to which, giving a berth, run for Goat Island light, and anchor as above directed.

NARRAGANSET BAY lies between Conanicut Island and the main. The course in is about N. ½ E., taking care to avoid the *Whale Rock*, which may be passed on either side: you may anchor as convenient. At the head of the navigation here is the town of PROVIDENCE, situate at the distance of nine leagues from the sea.* Ships drawing from 15 to 18 feet of water may sail up and down the channel, which is pointed out by stakes, pyramids, or spindles, fixed at the extremity of the shoals and banks in the river.

In the passage between Conanicut Island and the main, on the islet called *Dutch* or *Duck Island*, is a *harbour-light*, at 3 miles North from the Beaver-tail, and on the north side of the entrance of *Dutch Island Harbour*, a harbour in which vessels may lie safely in 4 fathoms. Vessels bound into this place should run within half a mile of the light-house, before they haul to the eastward for the harbour, as a shoal lies on the south side.

There is another harbour-light *(fixed)* on *Warwick Neck*, on the west side of the entrance to Providence River, at three leagues to the northward of that on Dutch Island. Warwick Neck forms the eastern side of the entrance to *East Greenwich*, which is half a league broad. The opposite side is called *Long Point;* and, on the shoal that surrounds it is a spar buoy, which, on entering, is to be left on the larboard side.

RHODE ISLAND TO MARTHA'S VINEYARD.—From the lighthouse on Conanicut Island to that on Gay Head, the bearing and distance are E.S.E. ¼ E. nine leagues. In a scant wind, take care that the flood does not carry you into Buzzard's Bay, or on the *Sow and Pigs*, which lie off the south-western extremity of the Elizabeth Islands. On approaching the latter the light on Cuttahunk will be seen.

LONG ISLAND SOUND AND LONG ISLAND IN GENERAL.

THE ENTRANCE of LONG ISLAND SOUND lies to the west of Block Island, between Montuck Point, the east end of Long Island, and Watch Hill Point, on the north or opposite shore. Here it is 4½ leagues broad; and hence it extends to the west 30 leagues. The south side of the sound is wholly formed by LONG ISLAND, which, from end to end, extends 33 leagues, while its broadest part is about 6 leagues. The land of this island is, in general, rather low and level, with the exception of a few hills (the *Landmark Hills)*, 12 leagues to the west of Montuck Point, and *Hempsted Hill*, towards the eastern end, which is 319 feet above the level of the sea.

LONG ISLAND SOUND affords a safe navigation from New York to steam-boats and shipping bound to and from the ports on the north side of Long Island and those of the states of Connecticut and Rhode Island, to Newhaven, Saybrook, Hartford, &c.

SOUTH SIDE OF LONG ISLAND. Along the south side of this island, between Montuck Point and New York Harbour, is a border of sandy ground, of unequal breadth, but extending, near the middle part, to the distance of three miles from a low and broken shore. The courses along this flat, from Montuck Point toward the entrance of New York Harbour, are W.S.W. ½ W. 22 leagues, and thence W. ½ N. 11 leagues.

The eastern part of the flat is of sand; the middle and western parts of sand and stones. At about 4 leagues from the island are from 15 to 18 fathoms of water; and, from that distance to 20 leagues, the water deepens to 80 fathoms: in the latter depth

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* Providence is the oldest and most populous town of the state of Rhode Island: it has nearly 18,000 inhabitants. The College of Rhode Island is established here; and there are many other elegant structures. The population of Newport is about 8000.

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the ground is oazy, and has sand with blue specks in it. At about 4 leagues from the east end of the island is coarse sand, with small stones; and, at the same distance without the west end, there is small white sand and gravel, with black specks. From the S.W. end, the *East Bank* of New York Harbour extends 5 miles towards Sandy Hook, on the south side of the same.

LIGHTHOUSES, &c. IN THE SOUND.—The navigation of Long Island Sound has been greatly facilitated by its modern lighthouses. The first is that on *Montuck Point*, at 5¼ leagues W. ¼ S. from the south end of Block Island. The light is *fixed*, 100 feet above the sea, and may be seen 9 leagues off.

On the shore of the main or north side are the lighthouses on *Watch-hill Point, Stonington Point*, and *New London Harbour*. That on *Watch-hill Point* is at the entrance of Fisher's Island Sound, and shows a *revolving light*, at 50 feet above the sea.

STONINGTON POINT, four miles to the north-westward from Watch-hill Point, exhibits a *fixed light*.

NEW LONDON LIGHTHOUSE, on the western side or chop of the entrance to New London Harbour, has a *fixed light* at 80 feet above the sea.

The GULL ISLAND LIGHT is on an islet called the *Little Gull*, upon the south side of the main channel into the Sound. It is a *fixed light*, at 50 feet above the level of the sea. From Montuck Point this light bears N.W. ¼ W. 13½ miles; and from the Gull light that of New London bears N. by E., 6½ miles.

PLUM GUT is the Southernmost Channel into Long Island Sound. It is formed by Plum Island to the N.E. and a sharp point, called *Oyster Pond Point*, to the S.W. The distance between the two shores is a mile, but a narrow reef stretches nearly half over to the E.N.E. On the west end of Plum Island is a lighthouse, with a *revolving light*, designed to facilitate the passage through the Gut.

Vessels taking this passage may run boldly for the bluff on which the lighthouse stands; the danger lying chiefly on the western side, from the reef above-mentioned. From the outer part of this reef to the lighthouse the distance is only three-quarters of a mile.

From Plum Island Light the New London lighthouse bears N.E. ¼ N., 10 miles; and Saybrook lighthouse N.W. ½ N., 8½ miles.

SAYBROOK LIGHTHOUSE, on Lynde Point, the western point of the entrance of Connecticut River, has a *fixed* light at 35 feet above the level of the sea. The bearing and distance of this light from that on the *Little Gull* are N.W. by W. ½ W., 11 miles; and from that on the west end of Plum Island N.W. ¼ N., 8¼ miles. The Bar of the River, on the outer edge of which are from 9 to 12 feet of water, extends nearly two miles to the south-eastward from the lighthouse.

FALKNER'S OR FALCON ISLAND LIGHT.—The lighthouse on this islet bears W. ¼ S., 14 miles, from that of Saybrook. The light is *fixed*, at 75 feet above the level of the sea. At rather more than a mile E. ½ N. from it, is a small shoal of 3 fathoms, named *Kimberly's Reef;* and, at a mile to the westward of it is an islet called the Goose, surrounded by a dangerous reef, which extends from it more than half a mile to the north.

There is good anchorage on the western side of Falkner's island, with the wind from the eastward. In going in, give the south end of the island a small berth, and anchor with the light bearing E. by S., one-third of a mile from the island, in 3 fathoms, soft bottom. There is, also, a good and smooth bottom on the eastern side.

NEWHAVEN LIGHTHOUSE, on *Five-mile Point*, the eastern side of the entrance, shows a *fixed light*, at 35 feet above the level of the sea. This light bears W.N.W. ½ W., 11½ miles from that of Falkner's Island.

There are several ledges without the point, within the circle of a mile, but they are buoyed, and to be left, when entering, on the starboard side.

STRATFORD POINT LIGHT, at nearly 10 miles S.W. by W. ½ W. from that of Newhaven is a *revolving light*, refulgent once in 90 seconds, and marking the western side of the entrance to *Stratford River*. Nearly in the middle of the Sound, at S. ¼ W. 5¼ miles from this light, is a shoal of some extent, called the *Middle Ground*. Two buoys now denote its situation.

Black Rock Harbour Light, two miles to the west from the Bar of Bridgeport, stands on the south point of Fayenweather or Fairweather Island, which is 5½ miles westward from Stratford Point. The light is brilliant and *fixed*, and elevated 45 feet above the sea. The harbour is much frequented by vessels navigating Long Island Sound. By entering with the light bearing N. by W. you will clear a dangerous shoal lying on the larboard side, and on which is a *beacon-light*, to be left, on entering, upon the larboard side.

Oldfield Point, on Long Island, at a mile to the west of a shoal harbour, (*Setauket*,) lies nearly S. by W., 10½ miles from Stratford Point. It has on it a lighthouse, with steady or *fixed light*, at 70 feet above the level of the sea.

Eaton's Neck, on the eastern side of Huntingdon Bay, Long Island, is 13 miles West from Oldfield Point. Near its extremity is a lighthouse, with a single *fixed light*, standing on an eminence, about 73 feet high; the building is 50 feet more, and the total height, above the sea, is 126 feet. It stands at 300 feet above high water mark, and is painted *black and white*, in stripes, from the top to the bottom.

Norwalk Lighthouse, on *Sheffield's Island*, stands at the distance of 14½ miles W.N.W. from that on Oldfield Point, and 6 miles N. ½ W. from that on Eaton's Neck. The light is *revolving*, at 35 feet above the level of the sea, and shows, alternately, a blood red and a brilliant light, by which it may be readily known from the revolving light on Stratford Point.

From the west point of Sheffield's Island, a reef called *Green's Ledge*, stretches nearly a mile to the W. by S. Its extremity is marked by a buoy, which, on entering, must be left on the starboard hand. There is also a small ledge at more than a mile S.W. by W. from the light, with a black spar buoy upon it, which, on passing, may be left on either side, but had best be left on the starboard hand.

At 3½ miles W.S.W. ½ W. from the light on Sheffield's Island is a dangerous reef, called *Smith's Ledge*, mostly in sight at low water. A buoy is placed at some distance from its southern extremity, in 15 feet at low ebb.

Greenwich Light.—At 10½ miles W.S.W. ½ W. from the lighthouse on Sheffield's Island, is a similar one on the *Captain's Isles*, between the townships of Greenwich and Rye. The bearing and distance of this lighthouse from that on Eaton's Neck is W.N.W. ½ W., 11¾ miles.

Sand's Point Lighthouse, on Long Island, near the head of the Sound, at 8¾ miles S.W. ½ W. from Greenwich or Captain's Isles' light. It exhibits a *fixed light* at 40 feet above the level of the sea.

Throg or Frog Point, in the western strait, 5 miles above Sands Point, on the western side;—a lighthouse here shows a *fixed light*, at 40 feet in height above the ground on which it is erected.

GENERAL DIRECTIONS.—Directions for sailing through the Sound, from Rhode Island, &c. From the lighthouse of Newport, or Rhode Island Harbour, the course and distance to a proper berth off Point Judith (having the lighthouse already described) are S.W. or a little more southerly, three leagues. Thence, towards the Gull Light, W.S.W. ½ W. 8 leagues, and W. ½ N., 2½ leagues. On sailing thus, at 7 miles to the S.W. of Point Judith, you will bring in a line the two lighthouses on the north end of Block Island, which will then bear South, and be in the direction of a reef extending far from that end of the island. Proceeding thence, six leagues, you leave Watch-hill Point Light and Fisher's Island on the starboard or north side; and have to observe that a dangerous reef extends from the S.W. end of Fisher's Island: without this is a rock, called the *Race Rock*, which is distinguished by an iron spear. On the larboard side you leave the Gull Island Light; and, having passed this, through the Horse-Race, or main channel, you will have fairly entered the Sound.

The distance from the Race Rock to the Gull Light is 3¼ miles; but nearly in a line between, at 3½ miles from Fisher's Island, and two from the lighthouse, lies the *Valiant* or *Middle Race* Rock, which has only 17 feet over it at half-flood: this is, of course, to be avoided.* From

* The marks for this rock, as given by the American officers, are, 1. New London Lighthouse in one with two conspicuous trees, which stand on the declivity of a hill, at the back of New London, being remarkable for a gap on its summit, N. 4° W. 2. The western side of the South Dumpling,

From the Gull Island Light toward the light on Falkner's Isles, the direct course and distance are W. ¼ N., 8 leagues. At this distance you will be a mile to the southward of the lighthouse last mentioned. From hence a course S.W. by W. ¾ W., 8 leagues, leads to a berth off Oldfield Point, which is distinguished by its lighthouse.

From a berth off Oldfield Point, a fair course to the middle of the Sound, to four miles beyond Eaton's Neck and its lighthouse, will be W. ¼ N., 5½ leagues, and hence to Sands Point W.S.W. four and a half. Here you enter the Strait, with Sands Point lighthouse on your larboard side, and the *Execution Rocks* on the starboard. The latter form a reef nearly half a mile long, on the eastern end of which is a white spar buoy, with a board pointing to the S.W. The course hence, towards Throg's Point Light is nearly S.W. by S. as shown hereafter.

If you pass through the Race with a flood-tide and southerly wind, as the tide runs very strong, due allowance must be made. In general, the time of high water, on the full and change days, is at half-past eleven, and the vertical rise is 5 or 6 feet.

PARTICULAR DIRECTIONS for LONG ISLAND SOUND and HARBOURS.—Should a ship have a fair departure from the middle of the Race, and be compelled to run up the Sound in a dark night, or in thick weather, the best course will be West, towards the lighthouse on Falkner's Island. If bound up the Sound, a course W. by S. 16½ leagues, will carry you up to Oldfield Point, on which is the lighthouse, already described (page 89.) On these courses you will leave Falkner's Isle on the starboard side. You may approach the Long Island shore, without danger, to the distance of two or three miles; but to the north shore should not advance nearer than 2 leagues, in order to avoid the reefs and shoals on that side.

Nearly in a line between Oldfield Point and Stratford Point, and in the middle of the Sound, is the middle ground called *Stratford Shoal* (which has been heretofore noticed,) having over it only two feet at low water. Two buoys, nearly north and south of each other, mark its situation.* A vessel may pass on either side of it, as on the north are from 3 to 7 fathoms, and on the south from 12 to 17 fathoms.

From Oldfield Point Light to Eaton's Neck Light the bearing and distance are West 13 miles. *Crane Neck* is two miles to the west of Oldfield Point, and the shore between it and Eaton's Neck forms the long bay, called *Smithtown Bay*, in which the water shoalens gradually, from 12 to 3 fathoms. A reef extends from the north shore of Eaton's Neck, to the distance of half a mile, and near its edge are from 5 to 6 fathoms.

From Eaton's Neck the north or sandy point of Lloyd's Neck bears W. ¼ S., 4 miles: between lies the deep bay of HUNTINGTON, where a ship of any size may anchor with safety, only keeping the eastern shore aboard. The entrance is fair, and the ground good. Within *Lloyd's Harbour* on the west, and *Cow Harbour* on the east, side of the bay, there are from 3 to 4 fathoms of water, and muddy bottom. Here fresh N.E. winds will swell the tides, which commonly rise about 7 feet perpendicular, to 10 or 12 feet.

From *Lloyd's Neck* to *Metinicook Point* the course and distance are W.S.W. ½ W. 7¼ miles, good soundings, borrowing on the Long Island shore to 7 fathoms. On the west side of Lloyd's Neck is OYSTER BAY, the channel into which lies over towards Lloyd's Neck, until you have passed the tail of the *Middle*. The latter is a sand-flat, extending from Hog Island, on the western side, towards the neck, to the distance of 180 fathoms. The bay thence is clear, with good anchorage throughout.

The bearing and distance from *Metinicook Point* to *Sands Point Light* are nearly W.S.W., 5 miles. Between these points is *Hempsted Bay*, in which is excellent anchoring, keeping the eastern shore aboard.

At three-quarters of a mile to the northward of Sands Point light lie the *Execution*

Dumpling, within Fisher's Island, just touching with the north hill or point of that island, N. 41° E. 3. The east bluff of the Great Gull Island in one with the western lower extreme of Little Gull Island, or the Gull Lighthouse a small sail's breadth open to the eastward of the east part of Great Gull Island, S. 64° W. 4. The north part of Long Island just shut in with the N.W. point of Plum Island, S. 76° W.; Gull Light S. 63° W.; and Mount Prospect, or high white sand-hills on Fisher's Island, N. 60° E.

* The buoy on the south side is a *white spar buoy*, and that on the north side is a *black one*. Both lie in 19 feet of water.

Rocks,

Rocks, with a buoy upon them, as already noticed, with a board pointing to the S.W. These rocks must be carefully avoided, leaving them on the starboard hand.

From *Sands Point Light* the course and distance to the south end of Hart Island is S.W. 2¼ miles. To the west of this island, between it and *City Island*, there is anchorage for vessels of any size. In making the course, should a vessel be obliged to turn to windward, two rocks must be carefully avoided; of these, one, called *Gangway Rock*, bears W. 28° S. from Sands Point lighthouse, distant about a mile, and has on it a black spar buoy, floating upright; it should be left on the larboard side: the other, called *Success Rock*, lies to the S.E. of the former, and has an iron spindle on it.

Over Gangway Rock, which terminates in a point, are only 6 feet at low water; it is, therefore, very dangerous. Success Rock is bare at low water: between the two is the channel, having about 2½ fathoms. These rocks bear from each other, N. 40° W. and S. 40° E. about one quarter of a mile.

From Hart Island to Throg or Frog Point the course is S.S.W. ½ W. 2½ miles; but here you must carefully avoid the *Stepping-Stones*, which are steep-to, and on the larboard hand. A buoy denotes the extremity. The soundings on the other side are regular to 3 fathoms. From *Throg Point* to *Hunt's Harbour* the course is West, and distance about 3 miles. In steering for this place, keep as nearly in mid-channel as circumstances will permit. *(Directions for the East River and Hellgate, from New York, are given hereafter.)*

BLOCK ISLAND TO GARDNER'S BAY, AND TO THE HARBOURS ON THE NORTH SIDE OF LONG ISLAND SOUND.

THE lighthouse on Montuck Point has been already noticed, (page 88). This lighthouse bears W. ½ S. 5 leagues from the S.W. point of Block Island. Between the island and the point, with the exception of one bank, there are 16 and 18 fathoms of water. As you approach the point, you will quickly come into 9, 7, and 5, fathoms. A flat extends from the point, on the outer edge of which is a depth of 5 fathoms, and rocky ground. There are rips without this flat, but they may be crossed by any ships, in 6, 7, 8, and 9, fathoms.

From the north end of Block Island, a reef extends to the distance of a mile, in the direction of the lights already noticed.

At about 5 miles W.S.W. from the body of Block Island is the Bank called the *Southwest Ledge*; its least depth is 4½ fathoms, and a heavy sea, at times, breaks over it. This is represented as a good ground for fishing.

A shoal of 6 feet, called the *Shagwandanock Reef*, lies 3¼ miles N.W. from Montuck Point. This reef ranges nearly N. by E. and S. by W. about one quarter of a mile. There is a good channel between it and Long Island, which is nearly one mile and a half wide, and has 3, 4, and 5, fathoms of water.

The *Cerberus Reef*, or *Middle Ground*, lies nearly in the middle of the entrance of the Sound, and has 16 feet over its shoalest part. From this shoal, Mount Prospect, or the high sand-hills on the west end of Fisher's Island, bears N. by W. ½ W. 5½ miles; the Gull Light N.W. by W. ½ W. 7 miles; the north bluff part of Gardner's Island, W.S.W. 9 miles; and Montuck Point S.E. by S. 7½ miles. The north and east sides of the shoal are steep, having 10 and 15 fathoms within half a cable's length of the shoalest part. It extends N. by E. and S. by W. three-quarters of a mile. On the south and west sides the water deepens gradually from 5 to 7, 8, 9, 10, and 13, fathoms: the north and east sides are steep, having 10 and 15 fathoms within half a cable's length of the shoalest part. The tide, in general, makes a great rippling over the reef.

The BEARINGS *of different objects, from* MONTUCK LIGHTHOUSE, are as follow: *Shagwandanock Reef*, N.W. 3¼ miles; *Cerberus Reef*, or Middle Ground, N.W. by N. 7¼ miles; east end of Fisher's Island, N. ¼ W., 13½ miles; Watch-Hill Point and Light, N. ¼ E. 14 miles; Race Rock, N.W. by N., 13½ miles; Gull Island Light, N.W. ½ W., 13½ miles.

In proceeding towards Gardner's Island, from the eastward, keep the two bluffs, or high parts of the land, to the westward of Montuck Point, open one of the other, until Willis's

Willis's Point, on the east side of Fort Pond Bay, comes open of Montuck False Point. These marks will lead safely through, in from 9 to 3 fathoms.

The tides set strongly about Montuck Point; the flood to the N.E., and ebb contrary. At the Shagwandanock Reef, the flood sets W. by S., and the ebb to the contrary.

On rounding Montuck Point in the night, when the land or light can be seen, and during a westerly gale, you may anchor when the light bears S.W. by S. in 8 or 9 fathoms, coarse sand. Having brought Montuck Point to the southward of west, when the weather is thick, and you cannot clearly ascertain the distance from the point, the lead must be your guide. Steer as high as W.N.W. until you have gained 9 fathoms; then haul off into 13: and, if you suddenly shoalen from 10 to 6, steer off E. by N., until you gain 11 or 12, which will soon be; and a good lead, kept well going, will prevent your going too near the reefs.

In the day-time, if bound to Gardner's Bay, and having rounded Montuck Point, steer N. by W. until you clearly discover the points that form Fort Pond Bay, and see the red cliff on the western point open of Willis's or the eastern point. You may then steer W. by S. for the bluff point of Gardner's Island, passing between the Shagwandanock and Cerberus Reefs.

A vessel may, if requisite, take shelter in Fort Pond Bay, which is half a league broad, and of the same depth. This place is very convenient for wooding and watering; the ground is clear and good, and you may anchor in any depth, from 7 to 3 fathoms, at pleasure. In a large ship you may bring Willis's or the eastern point, to bear N.E., and even N.E. by N., and then have in the middle about 7 fathoms of water. Near the shore, at the bottom of the bay, is a pond of fresh water.

GARDNER'S ISLAND, &c.—The N.E. point of Gardner's Island is 4½ leagues W.N.W. from Montuck Point. With a westerly wind you may anchor off any part of this island, in sandy ground. The marks for anchoring are the high lands of Plum Island, N.W., and the southern part of Gardner's Island in sight, bearing from S. by W. to South. Here the depths are from 12 to 10 fathoms, bottom of sand and mud.

The sandy spit of Gardner's Island extends 2¼ miles to the N.N.W.: to the eastward of its northern part is the *Superb's Reef,* the outer part of which is E.N.E. ¾ E. from the extremity of Gardner's Spit, one-third of a mile: it thence extends S.E. by E. about two-thirds of a mile, and is about 200 yards broad. The depth on the middle is 3 fathoms, 6 close to the N.W. end; 4, 4½, and 5, fathoms close to the S.E. end; 5 and 6 fathoms close to the east side. The mark for clearing it, when sailing into Gardner's Bay, is to keep *Plum Gut* (the channel on the west of Plum Island) a ship's breadth open. You may stand to the northward until Plum Gut is nearly closing with Oyster Pond Point, or the N.E. bluff of Long Island, or till the south point of Plum Island seems nearly to touch the same; but tack before the points close, or stand over into no less than 7 fathoms.

New London Lighthouse kept a sail's breadth open to the eastward of Plum Island, will run you up into the middle of Gardner's Bay, in the deepest water, and out of the tide. You may anchor, at pleasure, in from 5 to 8 fathoms. There is good riding on the S.W. side of the island. A ship from the east side, with an easterly wind, may take shelter here, by proceeding as above directed; for, it is to be observed that, the channel southward of the island is shoal, and fit for small vessels only. A conspicuous single tree on the S.E. part of Plum Island is a good mark for clearing the *Superb's Reef,* by tacking before it is brought to touch the south end of the wood on the same island.

PLUM GUT, between Plum Island and Oyster Pond Point, is the channel commonly used by vessels bound to the western part of Long Island Sound. In this Gut is a rock, on which the British frigate Loire once struck; but is so very small, that it is difficult to strike soundings on it; it is nearer to the reef extending from Oyster Pond Point than to Plum Island.*

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* This shoal has been described as a compound of rocks and large stones, with 16 feet of water over them, having 16 and 17 fathoms on the N.E. side, 20 on the N.W., and 6 and 7 on the south side. The marks are:—A single conspicuous tree in one with the eastern side of a grey cliff, on Gardner's Island, S.E. by E.; Oyster-Pond Point, W. ¼ N.; and the south or Pine Point of Plum Island, E. by N.; and the rocky point, or bluff point, of Plum Island, North.

There is another rock, having 24 feet over it, about 400 yards from the rocky or bluff point of Plum Island.

In

In advancing towards Plum Gut, the *Gull* or *Bedford Reef* is to be avoided. This reef lies to the south-westward of the Great Gull Island, and has 16 or 17 feet over its shoalest part at low water; and its outer part is about half a league to the S.W. by S. from the Gull Lighthouse. It is about 30 yards broad and 400 long, lying S.E. and N.W. The shallower part lies with a house on Plum Island, standing about one-third of the way between the middle and the N.E. end, on with the northernmost of the two trees which appear beyond the house; the west end of Gull Island N. by W. ½ W., and the south end of Plum Island on with Oyster Pond Point, or the N.E. point of Long Island.* In order to avoid this reef, be sure to keep Oyster Pond Point open of the south end of Plum Island, whilst the house on Plum Island is on with the northernmost of the two trees above mentioned. There are several trees; but they appear, when seen from a distance, as two only.

The tide in the Gut sets at the rate of 6 or 7 knots: the flood about N.N.W., and the ebb S.S.E. High water, on the full and change, at 10 h.

Plum Island Road, on the S.E. side of Plum Island. In this road a vessel may anchor, with Mount Prospect, or the high white sand-hills of Fisher's Island, touching the Gull Lighthouse, and bearing N. 62° E.; and the N.E. part of Long Island in one with the S.E. end of Plum Island, bearing West; or the east bluff points of Gardner's Island in one with the low beach extending from the north side of the island, S. 45° E. With these marks are from 7 to 8 fathoms, soft mud, and quite out of the tide, at not more than three-quarters of a mile from the shore of Plum Island, where there is very convenient and good water.

NEW LONDON.—The lighthouse on the western side of the entrance to *New London* bears from the *Race Rock*, off the west end of Fisher's Island, N. by W. ¼ W. 4¼ miles. A vessel bound to this port, after passing the Race Rock and S.W. end of Fisher's Island, should keep the light bearing between N.N.W. and N.N.E., if beating to windward; but, with the wind fair, bring the light to bear North, and run directly for it; leave it on your larboard side when running in: when in, you may find good anchoring in 4 or 5 fathoms of water, clayey bottom.

An officer of the American marine, Chas. Morris, jun., has surveyed the harbour of New London; and, from his chart, it appears that there are reefs on both sides, without the entrance; but particularly the *S.W. Ledge* and *Black Ledge*, on the eastern side, at three-quarters of a mile both from the eastern and western shores. New London is two miles up the harbour, from the lighthouse; and on the opposite shore is the town of *Groton*. The remarks on the chart are as follow: "Coming in through the Race, bring New London light to bear North, and steer for it until you pass S.W. Ledge, then steer for the middle of the entrance. Standing up the river, keep rather on the Groton side. There are reefs off Powder Island and White Rock, to clear which, keep the meeting-house, in New London, well open with Fort Point. Coming up Fisher's Island Sound, keep the light open with the west end of Pine Island about a sail's breadth.†

"Common spring tides rise 3½ feet; spring tides, 5 feet; variation, 6° West."

If entering Long Island Sound, from the S.E., when bound toward New London, the following precautions are to be attended to.—Observe that the mark for avoiding the *Cerberus Reef*, or Middle Ground, is, a conspicuous hill with a notch in its centre, at the back of New London, called *Pole's Hill*. This, kept a ship's length open, either to the eastward or westward of Mount Prospect, (or the sand-hills in the west of Fisher's Island,) will lead clear of the shoal, in 10 or 15 fathoms, to the eastward, and in 8 or 9 fathoms to the westward. The tide, as already noticed, sets strongly over the shoal.

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* The marks lately given are: 1. The N.E. end of the northernmost grove of trees on Plum Island touching the south declining end of the southernmost of the white sand-hills on Plum Island. These sand-hills are the two next south of the houses in the bay. 2. A large notch or gap in a wood on the main land, to the westward of Black Point, a sail's breadth open to the northward of a remarkable single black rock, which is between the south end of Great Gull Island and the N.E. end of Plum Island, N.W. by N. The rock appears nearly in form of half a semi-circle, with its perpendicular side to the east.

† *White Rock* and *Powder Island* are on the west side, about half-way up to the town. *Fort Point*, on the same side, is half a mile above White Rock. In New London are three remarkable buildings,—the *Court-House*, the *Meeting-House*, and the *Church*. The Meeting-House is the middle one. *Pine Island* is an islet, three-quarters of a mile without the harbour, on the eastern side.—Ed.

In

In scant wind, or a calm, a vessel should anchor before any of the marks or bearings are too near.

A vessel bound for New London, having brought the Gull Light to bear W. by N., or the light on Watch-Hill Point N.E., may steer so as to bring New London Lighthouse open of Fisher's Island; and, when the spire of New London Church, bearing N. 8° W., is in one with the gap on Pole's Hill, steering with it in that direction will carry you between the Race Rock and Valiant's Rock, or, you may bring New London Lighthouse a sail's breadth to the eastward of the church spire, bearing N. 5° E. which will carry you to the westward of the Valiant's Rock, or between that rock and the Gull Lighthouse. Thence steer for New London, as hereafter directed.

In case the weather should be thick, and New London Church spire is not to be seen, when bound to the westward through the Race, steer for the Gull Lighthouse, keeping it to the northward of west, until New London Lighthouse bears N. ½ E.; then steer for it, leaving the Gull Lighthouse at half a mile on the west or larboard side. When the Gull Lighthouse bears S. by W., you may steer N.N.E. for the Roads, making proper allowance for the tide, which is very strong.

In the winter season, when bound to or from New London, keep well to the west, should the wind be at N.E. and stormy. Your course, under such circumstances, for a good anchorage, is W.N.W. from the Gull, about 5 miles: then haul up, should the wind continue at N.E., and steer N.W. until you get into 10 fathoms of water, muddy bottom. Anchor as soon as possible. Here you will be to the westward of Black Point, between it and Hatchett's Reef. This is the best place to ride in, with a N.E. gale and thick weather, when the harbour of New London cannot be attained.

SAYBROOK, &c.—Having now given sufficient directions for the passages of Long Island Sound, New London, &c., we proceed to the other harbours on the northern side. The anchorage between Black Point and Saybrook has been noticed above. Saybrook, having an extensive bar, is no harbour for vessels either by day or night, except to those who are well acquainted. In passing, the light on its western point should have a berth of 3 or 4 miles.

From Saybrook Lighthouse, that on Falcon's or Falkner's Island bears W. ¼ S. [*W. by S.*] 5 leagues. The bearing and distance from the latter to the lighthouse on the eastern side of the entrance of New Haven are W.N.W. ¼ W., [*W. by N.*] 3½ leagues.

Cornfield Point is 2¼ miles to the westward of Saybrook Lighthouse, and from this point a long shelf stretches out nearly a league to the W.S.W. There is, also, nearly parallel to the coast, between Saybrook Lighthouse and Cornfield Point, a narrow bank, which may be called *Saybrook Bank*, four miles in length, the middle of which is a mile and a half South of Cornfield Point, and near its shoalest part, on which there is a depth of only 6 to 9 feet at low water. A too near approach may be dangerous, as the bank is steep-to, and probably increasing, so as to be connected, on the N.E., with the bar of Connecticut River. The bank is the more dangerous as the tide sets athwart it to the N.W. and S.E. From the west end of the bank Saybrook Lighthouse bears N. by E. two miles, and Hammonasset Point W.N.W. ¼ W. 5 miles. On the general course, above given, for proceeding towards Falkner's Island, the bank will be left at about half a league on the starboard side, and a greater berth may be allowed, according to the wind, &c.

NEWHAVEN.—When Falkner's Island Light bears E.N.E. ½ E. 3 leagues, the direct course towards New Haven is N.W., and distance 2¼ leagues. On approaching the harbour, the lighthouse will be seen, standing on Five-mile Point, upon the eastern side. This has already been noticed on page 88. On advancing to the lighthouse, it must have a berth of two miles; because a ledge, having a black buoy, bears S.W. from the point. The buoy lies a mile and a quarter S.W. by S. from the lighthouse; and within it, at three quarters of a mile N. by E., is a white buoy, on a shoal of 4 feet, called *Adam's Fall*. The *Quickses Rock* is a mile to the eastward of the S.W. ledge, and has a spindle on it, which lies with the lighthouse bearing N. by W. three-quarters of a mile. The buoy on Adam's Fall bears from the spindle N.W. by W. three-quarters of a mile, and the buoy on the S.W. ledge W.S.W. half a mile.

Vessels coming in from the eastward may pass between the buoy on the S.W. ledge and the spindle; this channel having 3 fathoms of water: by keeping mid-way between the

the shoals, and leaving the white buoy on Adam's Fall about half a cable's length to the eastward, you may steer for the end of the wharf. On this shore, in the channel-way, are 3, 4, and 5, fathoms of water, with muddy bottom. By bringing the lighthouse to bear S.E. you may anchor in Morris's Cove, near the eastern shore, in two fathoms of water, muddy ground. The course hence up the harbour, with a leading wind, is North. In running for the pier, give the Fort Rock a small berth.

Vessels bound into Newhaven, leave both buoys on the east or starboard side; and pass with safety at within half a cable from them. On beating in here, the soundings will be from 2 to 3 and 4 fathoms. Observe to stand in no nearer than to 2 fathoms upon the western shore; the bottom here is hard. In beating up, after gaining muddy bottom, the channel soundings, keep the lead quickly going, in order to avoid the hard ground of the western shore.

BLACK-ROCK HARBOUR.—This harbour, to the westward of Newfield Bay, is formed by Fayenweather Island on the east, and a reef called the *Cows* on the south; with the main land on the west: it is distinguished by the lighthouse (already noticed) on the south end of the island. On coming in for this harbour from the westward, and so as to avoid the *Cows*, you may bring the light to bear N. by W., and run directly for it until within the distance of three-quarters of a mile, whence you may stretch westward, in a fine beating channel, having from 3 to 5 fathoms, and good ground. On approaching the light, the depth gradually shoalens to about 2 fathoms, and the harbour may easily be entered.

On the easternmost rock of the Cows is a beacon-light, from which the lighthouse bears N. ½ E. one mile. From this point a single rock extends 83 fathoms farther, over which are 8 feet at high water, making in the whole a distance of 203 fathoms. The light hence bears N. by E. ½ E. Having passed this rock or point, the harbour will be fairly open from North to W.N.W. The bottom, to some distance to the south of the rock, is hard; but, with the lead going, it will soon be found to deepen.*

In NEWFIELD BAY, eastward of Fayenweather Island and Light, there is safe and good anchorage, during all winds, from W.S.W. by the North to N.N.E., quite to the mouth of *Bridgeport Harbour*, which is distant about two miles. The shore on the eastern side of the lighthouse is bold-to, with 3 fathoms, and it continues so to the south point of Fayenweather Island. This is one of the best bays for anchoring ground on the north side of Long Island Sound. It has from 4 to 3 fathoms of water, with the light bearing West. In coming hither from the eastward, after passing near Stratford-Point Light, the course to Black-Rock Light, will be W. by N.; and you keep in to soundings on the starboard side not less than 4 fathoms, and outward, or on the larboard, to not more than 8.

BRIDGEPORT.—At two miles to the eastward from Fayenweather Island and its light, is the shoal entrance of the Harbour of Bridgeport, which is now regularly buoyed. In entering, the outer buoy, upon the bar, is to be left on the larboard, thence steer for a beacon within, leaving the next buoy, (Stony Bar) on the starboard, and another, Allen's Flat, within the harbour, on the larboard, side. But no stranger can enter without the assistance of a pilot.

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* It has been remarked, in the "*American Coast Pilot*," that *Black Rock Harbour*, from its centrical situation, is one of great importance to vessels navigating the Sound, at all seasons of the year, especially in winter. Next to the harbour of New London, it is the most safe and convenient on the whole coast of Connecticut, admitting vessels of a large draught of water at all times of the tide. During the inclemencies of winter, when the communication with New York is obstructed with ice, numerous vessels, of all sizes, are not unfrequently compelled to seek a harbour here, for weeks together, where they ride secure from the drifting ice, and the violence of every wind, in the immediate neighbourhood of a flourishing commercial village, capable of furnishing every necessary repair, stores, or refreshments, that may be required, and on as good terms as in any of the larger sea-ports.

The distance between the lighthouse and the light-beacon on the *Cows*, is one mile: the bearing S. ½ W.: the depths, 3 and 4 fathoms. The lighthouse is octagonal, handsomely built of stone, 19 feet in diameter at the base, and 31 feet in height; it supports a lantern at 40 feet above high water mark, is painted white, defended from the sea by a strong circular fortification of massy rocks, and is fitted to withstand the storms of ages.—(*Blunt*, 11th Edition, p. 103.)

Directions for Sailing toward and into NEW YORK HARBOUR.

NEW YORK HARBOUR.—The entrance of New York Harbour lies between Sandy Hook, distinguished by its lighthouse, on the south side, and the east bank or shoal, which extends from the S.W. part of Long Island, on the north. A bar extends wholely across the entrance, the greatest depths over which, 3¼ and 3 fathoms, may be found by two buoys, white and black, which lie at 2½ miles to the E.N.E. and East of the lighthouse.

The light in the lighthouse of Sandy Hook is *fixed;* it is elevated 90 feet above the sea, has 18 lamps, with reflectors of 18 inches; and it may, with attention, be seen at the distance of ten leagues. On the False Hook, at some distance to the northward of the lighthouse, there are also two beacons, which are illuminated, and serve as a guidance to pilots in the night.

The elevations of land, at the entrance of the harbour, called the *High Lands of Nevisink,* (vulgo *Neversink,*) are the best guide to the harbour by day. These lands, on the south side of the harbour, may be seen 8 leagues off, from the depth of 30 or 31 fathoms of water. When first seen they appear like an island, rather level on the top, excepting some irregular risings towards Point Comfort on the west end, or inland side.

The respected Professor of Natural History, in the university of New York, Dr. Sam. L. Mitchill, late Senator in Congress, &c., has communicated to the public the altitudes of the following points in the vicinity of New York Harbour:—*Mount Mitchill,* the highest point of the Nevisink, in New Jersey, 282 feet: *Tomkin's Hill,* on Staten Island, within the harbour, 307 feet: and *Hempsted Hill,* in Long Island, 319 feet.

The elevated lighthouses which now stand on the high lands of Nevisink, were first lighted up in the evening of the 21st June, 1828. The northern light is *stationary* or *fixed,* and the southern is a *revolving* light. Both lights are elevated 250 feet above the level of the sea, and may be seen, in clear weather, from 40 miles off. The lighthouses bear N. 23° W. and S. 23° E. from each other, and the distance between is about 300 feet. The bearing and distance between the northern or fixed light and the lighthouse on Sandy Hook are N. by W. 3¼ miles.

Before entering further into a detail of New York Harbour, we shall here annex some general remarks from the recent relation of an intelligent traveller, and then subjoin the particular description.

"I had heard," says the writer, "much of the beauty of the approach to New York from the sea; but the reality altogether exceeded any expectation: it is undoubtedly one of the most magnificent scenes in the world. I know of no more happy disposition of land and water, nor such variety of marked and pleasing features any where on the shores or rivers of the British Islands. Neither the Bay of Dublin, nor the Isle of Wight, nor the Friths of Forth or Clyde, present the works of nature on a grander scale, or in more varied or interesting aspects. That boldness of character which lofty hills and mountains produce is alone wanting. The hills, which bound the prospect in three or four directions, are no where above 400 or 500 feet in height.

"Much of the city is not visible from the water; the island on which it is built consisting of undulating, but not in any part of it elevated, ground. Still the spires of the churches make a brilliant appearance, gilded by the setting sun, and towering among the trees which shade the streets, and amongst the masts of the ships surrounding the city on all sides but the north.

"The situation of this metropolis of the New World has been most happily chosen; in nearly the most central portion of the shores of this great continent, with a harbour safe and deep, and of unlimited capacity; comprehending, as it does, the mouth of the Hudson itself, unrivalled in its facilities of intercourse with the interior parts of the country, not merely by means of its sounds and rivers, but of its recently constructed canals, which, by the exertions of the late governor of this state, *De Witt Clinton,* were completed and brought into full operation three years ago. The *Erie Canal,* which will immortalize the name of *Clinton,* begins at that point in the River Hudson, about 160 statute miles to the northward of New York, where the river becomes no longer navi-

gable

gable for vessels of great size. The canal is above 360 statute miles long, affording communication to Lake Erie, which is elevated 568 feet above the Hudson at low water; and, of course to Lakes Huron, Michigan, and Superior, the most extensive repository of fresh water on the globe. The successful execution of this great work has led to splendid continuations of the system of water communication, especially to the canal, now far advanced, from *Lake Erie* to the *Ohio*, which continues the internal navigation from New York to the Ohio, Missouri, and Missisipi, and of course to Pittsburg, Cincinnati, St. Louis, New Orleans, and the Mexican Sea;—a line of water communication unparalleled in length in the world. The *Champlain Canal* connects New York by Lake Champlain with Canada."

The population and trade of New York have increased in a degree unexampled since 1783, when all restrictions were removed. The population was then 22,000; it is now about 200,000, besides 10,000 or 12,000 in Brooklyn, on Long Island, at the distance of less than half of a mile, where the Navy Yard is situated.*—*(Stuart's Three Years in North America.)*

NEW YORK HARBOUR.—The Bar, off Sandy Hook, lies in the parallel of 40° 28′ N. and longitude 73° 58′. On its outer edge are the two buoys above noticed; the southern *white*, and the northern *black*: the black buoy lies with the lighthouse bearing nearly W.S.W., and the white buoy with the lighthouse West, each 2½ miles. Between these buoys is the channel over the Bar, having 3½ to 4 fathoms at low water; and to the southward is the *Outer Middle Ground*, of 2 to 3 fathoms, which extends 4 miles to the southward, as shown by the particular plans of the harbour.

Around Sandy Hook and within the harbour, the buoyage and beaconage are excellent. The channel-way between the two outer buoys is a mile wide, and these buoys lie nearly North and South from each other. The course in is W. by N. 3 miles, to abreast the False Hook, near the lighthouse, and thence West, a mile and a half, to a *black can buoy* on the S.W. spit of the East Bank; and, having passed the latter, leaving it on the starboard side, you haul to the N. by E. for the river.

In passing up, on the direction last mentioned, N. by E., which may be pursued for more than five miles, you leave, on the larboard side, a *white buoy* on the *Knoll*, which bears from the black buoy on the S.W. spit N.N.W., one mile and a half; and afterward you leave, on the starboard hand, a *black can buoy* upon the *Inner Middle*, (on the edge of the *East Bank*,) which bears from the black buoy on the S.W. Spit, N. by E. ¼ E. 2¾ miles. Still pursuing your N. by E. course, you will arrive off a *white can buoy*, upon the edge of the *West Bank*, and lying at a mile and three-quarters N. by W. ¼ W. from the black buoy on the Inner Middle. Having advanced thus far, your course to the Narrows, between Long Island and Staten Island, will be N. ¼ W. 3 miles.†

The entrance of the Narrows is marked by Fort La Fayette (formerly Fort Diamond) on the eastern or Long Island shore, and by a lighthouse, with a *fixed* light, upon the opposite shore, on the eastern point of Staten Island, near which there is another fort.

The channel way is now between the two islands, and extensive banks which shelve

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* *Nov.* 1st, 1827.—Had a cruise over the greater part of the magnificent harbour of New York. All nature looked beautiful. Packet ships sail monthly, on the 1st. Bustle and arrangements:—two for Havre; two for New Orleans; for Charleston, London, and Liverpool, each one. French players, with their lap-dogs, &c. for New Orleans. Five different languages going on at the same moment; French, Spanish, German, Italian, and English, without the parties having the least apparent consciousness that there was any thing remarkable in such a confusion of tongues.—*(Captain Basil Hall.)*

† Besides the Can buoys above-mentioned, there are placed intermediately, on the edges of the shoals, between them, a number of spar buoys, *black* on the one side of the channel, and *white* on the other; and they are so arranged that, on coming in from sea, the black are to be left on the starboard, and the white on the larboard, side. Four buoys of this description (white) are laid near the False Hook, between the white can buoy on the bar and the point of Sandy Hook. Having passed the two outer can buoys, they are, consequently, to be left on the larboard side, and you must be cautious of not approaching too near them. There are likewise placed, on the edges of the *East Bank*, a series of *black* spar buoys. Of these, there are five upon the southern edge, between the black can buoy of the bar and that of the S.W. spit; and four on the western edge, between the S.W. spit buoy and the can buoy (black) on the *Inner Middle Ground*. On the edge of the bank, upon the Staten Island side, are six *white* spar buoys below, or to the S.W. of, the white can buoy of the *West Bank*, and four others above it, or between it and the lighthouse on the east point of Staten Island.

off from either side. Above Staten Island, on the western side, is a flat extending up to *Pawles Hook*, a distance of 2¾ miles, near the edge of which are two reefs, dry at low water, and three low islets. On its edge, between the south or *Robin's Reef* and *Bedlow's Isle*, are three *white* spar buoys. On the opposite side of the river is a mud flat, the edge of which is denoted by four *black* spar buoys; the last of which is about a mile below Governor's Island, and within two miles S.S.W. from the Fort Point of the city of New York.*

The course and distance from the entrance of the Narrows, to a fairway toward the eastern and western banks, are N.N.W. two miles; and thence, between the banks, to the entrance of the North River, or up to the city of New York, N.N.E. 5 miles. In proceeding on the latter course, you leave the three *black* spar buoys and the islets above-mentioned on the larboard, and the four *white* spar buoys on the mud flat upon the starboard, hand.

DIRECTIONS for COMING IN FROM SEA.—A general description of the Southern Coast of Long Island has been heretofore given in page 87; but here we have to add that, at about 12½ leagues E.N.E. from the High lands of Nevisink is an inlet, or break, of the coast, called *Five Island Inlet*, and so named from five low islets which lie within it. On the eastern side of this inlet there is now a lighthouse, which exhibits a revolving light at 90 feet above the sea, and which, therefore, may be seen on the parallel of the Nevisink lights, and at more than five leagues off.

On advancing toward the lighthouses on Nevisink, approach no nearer than three miles from shore, in order to avoid the *Outward Middle*, steering to the northward until you bring the lighthouse on Sandy Hook to bear West; then steer in for it, as the flood outside sets to the northward; but, at a little way in, it sets to the westward. In approaching the lighthouse, you pass between the two can buoys on the bar, upon the W. by N. course, already described, and must not haul too near the bank of the False Hook, the extent of which is shown by the four white spar buoys above-mentioned.

When you have got in so far as the point of the hook, where the beacons stand, you then haul into the bay, W.S.W.; but, if you mean to anchor in the bay, haul in S.W. giving the point a mile of distance, until you bring the lighthouse to bear E. by N. or E.N.E., where you may anchor in from 5 to 7 fathoms of water, soft muddy bottom. But to proceed up to New York, when you have come in as already directed, and got within the beacons, or the point of Sandy Hook, steer up W. by N. until you have passed the black buoy on the S.W. spit, or until you bring the lighthouse to bear S.E., and *Bond's Hollow* to bear S. ½ E.,† you must then steer up N. by E. ¼ E. for the bluff of Staten Island. By steering as directed, you will turn the S.W. spit, (known by its black buoy,) and pass up between it and the Knoll buoy on the West Bank. Continue steering N. by E. ¼ E., until you shoalen your water, which you soon will do, if it be young flood, as it sets from 2½ to 3 miles to the westward.

At the time you turn the S.W. spit, you will see, on the Jersey shore, above the Narrows, two hummocks of land, *each* forming *like a saddle:* The easternmost of the two is the mark for going up the channel, so as to avoid the Upper Middle, by keeping it just open with the Bluff Point of Staten Island, which will be the case if you turn the spit as directed: this will bring you up the channel-way. When you have sailed the course described, for 5 miles, and with this mark open, then you must haul more to the eastward, until you open the other hummock, which is called the *westernmost hummock;* by keeping both hummocks open to your view, you avoid the Middle and West Banks entirely, and come up the channel-way through the Narrows. When thus far, you must, to pass *Fort La Fayette*, keep Staten Island shore on board.

The mark to pass the upper part of the West Bank and Fort La Fayette is, to keep Bedlow's Island open with the westernmost point of Long Island; for, if you can see Bedlow's Island in coming through the Narrows, there is no danger from the Narrows up to New York: you will steer up for Bedlow's Island, to avoid the mud-flat, which you leave on your starboard hand: to avoid this flat, do not stand too far to the west-

* This flat is described as a kind of oyster bed, or bank of mud and shells, having not more than 11 feet over it at low water. It is 2¼ miles in length from N.N.E. to S.S.W.

† *Bond's Hollow* is the hollow which makes the termination of the High lands to the westward.

ward,

ward, on account of *Robbin's Reef*, upon the west side; to avoid which, in running on the west side of the channel, the mark is, to keep the point of land up the North River, on which Fort Lee stands, open with the east side of Bedlow's Island; after which there is nothing material to obstruct the navigation to New York, it being very steep near the point of Governor's Island, and the rocks near the battery do not exceed 100 yards from the shore.

There are three reefs of rocks in the East River, viz. one off the north side of Governor's Island, with 15 feet of water on it; one off the battery, having 9 feet over it; and one off Corlaer's Hook, which is very dangerous. They may be distinguished, at all times, by the rip of the tide going over them, both flood and ebb.

	H.	M.
It is high water, on the full and change days, at Sandy Hook, at	7	30
But the stream of tide continues to set in, at the rate of 2 knots, until	9	0
At New York, in the East River	9	0
——— in the North or Hudson's River	11	0

The vertical rise of tide is about 7 feet; but it is sometimes checked by the westerly or north-westerly winds, so as to lower the water on the bar to 3¼ fathoms. Easterly or north-easterly winds have frequently raised it to 5 fathoms.

The flood sets strongly to the westward from the S.W. spit, until above the Upper Middle, whence it runs up in the channel-course to the Narrows.

The tide, during the last quarter-ebb, sets from North or Hudson's River, around Fort Point, and flows up the East River, at the rate of 3 knots; whence, with a like velocity, it returns two hours before the North River high-water time. This affords great convenience to ships in shifting their berth from one river to the other. Ships of war may, during the summer-season, ride in either river, in the stream; in the winter they haul-to, or moor between the wharfs. The *twelve-feet ledge* off the town, and the sunken wrecks and *chevaux-de-frize*, are shown by the ripple of the tide.

The EAST RIVER, from New York, upwards, to Long Island Sound.

The best passage up the East River is to the northward of Governor's Island, keeping mid-channel until you are past the rocky flats off Long Island, (opposite the Careening Yard, and the south-east reef of New York Island,) which runs out 150 fathoms in a southerly direction from Red Bank: from this, the Long Island shore is bold to Bushwick Creek, where it shoalens a little way off Pat Point.

In order to clear the York Island Shore Flat, opposite Bushwick Creek, borrow towards the creek, keeping the water-mill on Wallabout Bay (near Brooklyn) on or open westward of Brooklyn church-spire (on a hill to the westward); you may sail close under the bold rocky cliffs on the western shore.

Blind Rock and *Governor's Table Rock* extend to the S.W. 600 fathoms, on a range from Blackwell Island, which forms the two channels of the river. This island, though narrow, is a mile and a half in length. The channel on the west side of the island is clear, and throughout deep, a boat's length from the shores. There is a sunken rock two-thirds of the way up the eastern channel, and about 30 fathoms from the starboard shore.

Before you enter into either of the Blackwell Island channels, if flood, let the tide be nearly spent; if ebb-tide, endeavour, by stemming the stream, which continues swift until a quarter of an hour before the turn of the tide, to reach Hell-gate at low water slack; the most desirable time to get through. As you run up between Flood-rock, which is steep-to, and the point of Long Island, bear up more easterly, keeping in mid-channel. The least drain of tide will show the *Hog's Bank* dangers upon the south side of Barn Island, on your larboard, and the *Pot Rock* on your starboard, by the uncommon ripple and boiling appearance of the water.

There is sufficient depth for large ships, until you come up with *Marsh Isle*, to the N.E. of Barn Island, where it shoalens, and forms a bar across the channel, with only 4 fathoms at the top of high water; and, about a third of the way over from the isle, there is a single rock, with no more than 10 feet of water.

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To return through Hell-gate, high-water slack is the most convenient time, as the tide is favourable down to New York; there is, however, sufficient depth at low water for any ship in the Gate. Should the pilot have miscalculated the tide, and the ship, with a strong favourable tide and a leading breeze, have advanced near the Gate, you must attend to the true set of the stream, in which you may easily keep the ship with lofty sails; low sails being liable to be becalmed by the land. The principal ebb stream leads round *Mill Rock*, which is very bold, whence it turns short to the southward by Flag-staff Point, in the western Blackwell Island Channel. The passage between Mill Rock and Scott's Cap is deep, but very narrow. The southernmost passage, between Flood Rock and Long Island, is used on the flood only, when the stream leads fair through.

Captain Holland, on his Chart of the coasts of New York, &c. says, *Hell-gate* and the narrow pass leading into Long Island Sound, at the time of slack water, and with a leading wind, may safely be attempted by frigates. Small ships and vessels, with a commanding breeze, pass at all times, with the tide. On the flood, when bound into the Sound, you pass to the southward of the *Flood Rock*, which is the southernmost of the three remarkable rocks in the passage. On the ebb you go to the northward of the *Mill Rock*, the stream of the tide setting that way, and forming eddies in the Flood Passage, which is, at that time, very unsafe. The *Pot*, on which there is 10 feet at low water, shows itself distinctly by the whirlpools, as also the *Paw*, which is a part of the Hogsback.

From Marsh Island, eastward, the Sound is navigable for the largest ships. The stream continues moderate for about 3 leagues to Throg or Frog Point, where the New York tide meeting the Sound tide in contrary directions, causes a perfect stagnation. *The Ship Channel* is to the northward of the Two Brothers Isles and Halett's or Riker's Island, observing to keep near the main until past Lawrence Reef (which extends one-third channel over from the east point of Flushing Bay); and thence keeping clear of the north shore until you have doubled Throg Point Peninsula. Your course thence to *City Island* is about N. by E. half a league. You must observe not to borrow towards the west side of the Peninsula, on account of the mud flat extending from it towards City Island anchorage. The *Stepping Stones* (partly dry at low water) leave a sufficient channel to the northward to work up or down. The *Executioner's Rocks* (dry at half-tide) lie north-east two miles from Hart Island, and north about one mile from Sand's Point lighthouse: the channel to the southward of them is the most frequented. Here the Sound widens, and the bays of Long Island, as already described, (pages 89, 91,) afford secure anchorage.

Harbour-Master's Regulations of the Port of New York.

1. No vessel shall be moored in the stream nearer than two-thirds of the distance from the wharfs to Long Island; nor shall any vessel lie at single anchor within that distance more than one day.

2. Any vessel which shall foul another, properly moored in the stream, shall be liable for all damages.

3. All vessels lying at the wharfs or piers, or in the basins or slips, shall, unless otherwise directed, lie with their heads up the dock; have their lower and topsail yards well topped by the starboard lifts; their moveable fore and aft spars and spritsail yards rigged in; stern davits, out-riggers, and boomkins unshipped; and the anchors taken up, with the crown in upon the forcastle. And any vessel which shall, through failing to comply with this regulation, be the means of damage to another, shall be liable for the damage.

4. All vessels at the end of a wharf or pier shall haul either way, to accommodate vessels going in or coming out.

5. All vessels not discharging or receiving cargoes, shall make room for vessels needing immediate accommodation; those wishing to discharge to have the preference of berth to those loading. Vessels returning, or putting into port in distress, always to be first accommodated. As to the fact of vessels being *bonu fide* employed in these particulars, the Harbour-master is sole judge.

6. All

6. All vessels shall have on board a ship-keeper, or person to take care of them: and, if any vessel shall be required to remove, and no person be found on board for that purpose, the harbour-master shall cause the same to be removed, at the expense of the master, owner, or consignee, who shall also be liable for all damages occasioned by such vessel.

7. No vessel shall be moored or fastened in such place or manner as shall, in any-wise, obstruct or interfere with the steam or team ferry-boats, at any ferry of this city.

8. No ballast shall be thrown overboard, on this side of Sandy-Hook, below low water mark: and, in the harbour, all ballast must be landed above high water mark.

9. No person shall encumber any of the wharfs, piers, or docks, with spars, boats, goods, or other things.

10. No vessel loaded, in whole or in part, with loose hay or straw, shall be permitted to lie or come within 50 yards of any wharf, pier, or slip, while having on board any fire or lights, candle or lamp: and vessels having gun-powder on board shall discharge the same before coming within that distance.

11. No fire shall be made or kept on board of any vessel, at any of the wharfs, piers, slips or basins, after eight o'clock at night, or before day-light in the morning.

12. No pitch, tar, or other combustibles, shall be heated on board any vessel at any of the wharfs, piers, slips, or basins, of this city; but all such business shall be done on floating-stages or boats, or on the wharfs, at least six feet from the edge of the wharf, and with a bucket of water always ready.

All persons failing to comply with the foregoing Regulations are liable to a penalty of fifty dollars for each offence, and for all damages, with costs of suit.

Harbour-Master's Fees.

On all vessels of the United States, and on all foreign vessels permitted by law to enter on the same terms as vessels of the United States, which shall enter and load or unload, or make fast to any wharf, *one cent and a half* per ton, according to the tonnage in the vessel's register or papers.

On all other vessels, *double that rate.*

The fees are payable in forty-eight hours after arrival, on penalty of paying double the amount, and costs of suit.

For adjusting any difference respecting the situation or position of any sloop or schooner engaged in the coasting trade, on the application of the person having charge of such vessel, *two dollars*, to be paid by the party in fault.

Directions for Ships bound to New York Harbour, and falling in, at a distance, either to the Eastward or Southward of Sandy Hook.

Should you fall in with Montuck Point, the east end of Long Island, on which the lighthouse stands, with an elevated *fixed light*, as before described, observe that it may be readily known by the soundings exhibited on the Chart. In proceeding thence, westward, for Sandy Hook, you should not approach nearer to Long Island than to the depth of 15 fathoms; and, in approaching the Jersey shore, the lead should be constantly hove, as you ought not to stand that way nearer than in 10 fathoms, especially in the night or thick weather.

When coming in from the Eastward, and passing the meridian of Nantucket, or of 70° W., between latitude 39 deg. and 39 deg. 30 min., take notice, if possible, when you pass the edge of the Gulf Stream; as, at the distance of 10 leagues within it, you may expect soundings; so soon as you obtain which, you will probably experience a variable or S.W. current.

Should you now be running for the New Jersey coast, to the northward of the parallel of the Egg Harbours, (about 39½° N.) and being near the land, you may suddenly deepen your

your water to 13 fathoms. In this case put about immediately, as many vessels have been deceived by a hole in this part, of the dimensions of four acres of land, and some have thus been lost.

If beating to windward off the Hook, when waiting for a pilot or a wind, either by day or night: when the Hook lighthouse bears nearly West, you will be sufficiently near to Long Island. Here the soundings will be of fine white sand; but towards the Jersey shore they are darker and coarser; and in the fair channel the depths will be found greater than on either side, with mud and sand.*

Here you will come in sight of the *Nevisink Lights*, which stand as described in page 96.

When you arrive off the high lands and lighthouses of Nevisink, should you not obtain a pilot, you may venture to proceed, by keeping at the distance of 3 miles from the bare part of the land of Sandy Hook, until you come up with the cedar-trees on the Hook. You will now come in sight of the buoys already described, and may pass as before directed.

Should you fall in so as to make Cape May, or the Capes of the Delaware, you will see the lighthouse on that Cape, which displays a *revolving light*, at 75 feet above the sea, as shown hereafter, and may likewise see a light-vessel, lying within the Bank, near the parallel of Cape May, at more than four leagues from the land. By bringing the light-vessel to the S.W. you may proceed on a N.E. course to the parallel of *Little Egg Harbour*, or 39° 30′, at about 10 miles from the nearest shore. The course and distance thence, to the same distance east of Sandy Hook, will be N. by E. 20 leagues, in general soundings of 16 to 20, and not less than 11, fathoms.

NEW YORK HARBOUR *to the* DELAWARE *and* PHILADELPHIA.

SANDY HOOK to the DELAWARE.—To the valley at the foot of the high lands of Nevisink succeeds a tract of low table land, and southward of this is a considerable and remarkable tract of *Woodland*, which terminates at six leagues S. by W. from the Nevisink Lighthouses; next follows an extensive lagoon, named *Barnigate Sound*, which is fronted by a narrow strip of low land. The coast, from the high lands of Nevisink to the elbow of an island, called *Barnigate Long Beach*, trends nearly S. by W. 16 leagues, and the soundings regularly decrease toward shore from 12 to 7 and 5 fathoms.

Barnigate Inlet.—In the parallel of 39° 48′, at 12 leagues to the southward of New York Harbour, is the *Inlet of Barnigate*, or the entrance of Barnigate Sound. A shoal bar extends outward from this place to the distance of two miles, and the bottom is an admixture of mud, shells, and gravel. The outer edge of the shoal is steep-to, and you may pass it in 6 fathoms within a short distance from the outer breaker; but, during night, keep, at least, in 9 or 10 fathoms. The soundings more to the northward in these depths are fine white sand, with very hard bottom.

Barnigate may be readily known in the day, even when the breakers are not seen, as there is a long grove of wood, back in the country, apparently 3 or 4 miles long, di-

* It was remarked, by the late Mr. *Murdo Downie*, that "commanders from sea, approaching any part of the American coast between Long Island and Cape Hatteras, if in doubt about their reckoning, should take notice that the outer edge of the bank off this part of the coast appears to be very steep; for it has been frequently found that, while the lead has been kept going, there have been found 45 fathoms; soon after 35, and a mile nearer shore only 25 or 20 fathoms: from these depths the shoaling to the shore varies in different directions.

The soundings along the New Jersey coast are the most regular, as the water there shoalens from 35 fathoms on the outer edge to 10 or 12 fathoms in sight of land, and thence to 7 fathoms near the shore; excepting only from 2 leagues south of Shrewsbury Inlet to the bar of Sandy Hook, where the water is deeper. Here are 10 fathoms near the shore, and deeper farther out, with some patches of rocky bottom. In latitude 39 deg. 24 min. the outer edge of soundings lies 19 leagues from shore, and E.S.E. from Great Egg Harbour 18 leagues.

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rectly within the Inlet, and commonly called the *Little Swamp*. With the north end of this land directly abreast, you will be to the northward of Barnigate.

When advancing from the southward for New York Harbour, and hauling in for the Woodlands above described, you may, with the wind off shore, keep within a cable's length of the coast until up with the High Lands; and should your vessel not draw more than 10 feet, you continue your course until up with the northernmost part of the cedars on Sandy Hook, whence you proceed for the Harbour according to the preceding instructions.

BARNIGATE to CAPE MAY.—Between the elbow of Barnigate Long Beach and Cape May, at the mouth of the Delaware, the coast forms a gentle concavity, but its general trend is nearly S.W. ¼ S. and the distance 18 leagues. The land is, generally, low and broken, forming several islets and inlets. The soundings are regular, commonly 8 to 10 fathoms at two leagues from shore; but there is a sand bar at every inlet, several of which extend off to a considerable distance.

LITTLE EGG HARBOUR, in the parallel of 39° 30′, long 74° 19′, is a small harbour formed by low isles or beaches on the east, and by salt marshes on the west. It is now known as the port of *Tuckerton*. To a stranger this harbour cannot be recommended, unless as a retreat in case of emergency, several shoals about the entrance being dangerous; yet it has frequently served as a place of shelter in the winter, when violent N.W. winds have prevented vessels from entering the Delaware or New York Harbour.

The shoals form three channels, of which that called the *Sod Channel*, next the shore on the north side, appears to be the best. The next is the *Middle* or *East Channel*, and the third the *South Channel*. The Sod Channel lies in a S.W. direction; the Middle Channel in a W.N.W., and the South Channel in a N.N.W. direction.

On the north side of the entrance is *Tucker's Beach*, with Tucker's House, a remarkable house with two chimneys upon it, having a cluster of three single trees at some distance to the N.E. and a smaller house to the S.W. When advanced to this part you will come up to the buoys which now mark the several passages. The buoys are spar-buoys, and in 1828 were laid as follows:—

One buoy at the middle of the Sod Channel, a little outside of the Bar or breakers.

One at the inner part of the same channel, off Sod's or Small Point, and upon the north side of the main channel into the harbour. The latter bears S.W. from the outer buoy, and both lie in 2¼ fathoms of water.

One buoy on the side of the harbour opposite to Sod's Point, and bearing from the buoy off that point W.N.W.

One buoy at the middle of the East or Main Channel, a little outside of the bar or breakers, in 2½ fathoms.

One buoy at the point of the *Round Shoal*, in 2½ fathoms, upon the north side of the South Channel, bearing from the outer buoy of the East Channel W.S.W.

The Directions for Entering by the Sod Channel are, to run upon a S.W. course to within 30 or 40 yards of Sod Point. In so running you will have 2½ fathoms. Having passed the point, gradually haul round to the northward, giving the breakers on the land side a small berth, and you may then come to an anchor at pleasure, in from 7 to 10 fathoms on the east or island side, between the marshes.

ABSECUM INLET, at the distance of six miles S.W. from Little Egg Harbour, is another harbour which affords shelter to vessels of easy draught. In order to enter, bring a house on the point upon the larboard side to bear N.W., and steer directly for it until within the distance of a quarter of a mile: then haul to the northward up to the marsh, when you may anchor in from 3 to 6 fathoms. The depth of water on the Bar, at low water, is 9 feet. The ordinary rise of tide is 5 feet.

In approaching this inlet you must carefully avoid a shoal which lies 2¼ miles E.S E. from the entrance, having near it, within and without, a depth of 5 fathoms, increasing to 10 fathoms at six miles from land. At a mile N. by E. from this shoal is a similar one; each has about 11 feet over it at low water.

GREAT EGG HARBOUR.—The shoal entrance of the inlet of this name, with about 12 feet of water, is 3½ leagues S.W. from Absecum Inlet. Should you, when abreast

abreast of this place, be in the depth of 6 or 5 fathoms, you will find white and black sand, intermixed with broken shells. In the rear of Egg Harbour is the grove known by the name of the *Great Swamp*, by mean of which this place may be found. Having passed Great Egg Harbour, at the distance of four miles, a course of S.W. by S. for 25 miles will bring you up to Cape May.

In sailing between Great Egg Harbour and Cape May, on the course above mentioned, you will pass the inlets called Coston's, Townsend's, Hereford, Turtle Gut, and Cold Spring, each of which has a bar at its entrance. *Hereford Inlet* is frequented by the Delaware Pilots, who have no other harbour to the northward between this and Great Egg Harbour.

From off Cold Spring Inlet, which is the last, you may steer for Cape May W. by S.; but, if bound to Cape Henlopen, you must thence steer outward S.S.W., until the light-house on that cape bears West, when you may run for it, not approaching nearer than 2 miles. Cape May has several houses on it, and a large grove of trees to the westward.

In some directions for this coast, by Mr. George Walker, this gentleman has said the soundings, in general, are regular, with the exception of the bank off Cape May; but the ground you find on the lee is of various sorts. The Jersey shore is very low and sandy, but the land to the southward of Cape Henlopen is much higher.

In sailing between New York and the capes, if the wind should be in the north-west quarter, with which, in general, is clear weather, keep no farther off than to 10 fathoms; the nearer in-shore the stronger the current, which sets about one mile in an hour. The tide of flood runs W. by S., and the ebb E. by N., but you will have no tide farther off than in 8 or 9 fathoms.

If you are turning, with the wind to the westward, stand off no farther than to 18 or 20 fathoms of water. You may venture to stand in-shore into 6 fathoms, until you advance towards Hereford Creek, or about two leagues to the northward of Cape May.

The new Lighthouse on Cape May, which stands on the inner or western part of the cape, exhibits a *revolving light*, at 75 feet above the level of the sea. It stands in latitude 38° 57′, and is constructed on the principle of the Boston Light, described in page 60, which, on a near approach, appears fixed: the revolution is made once in a minute, and the light may be seen from 20 to 25 miles off.

SOUNDINGS, &c. OFF THE DELAWARE.—The soundings opposite to the entrance of the Delaware are very unequal. At 15 leagues eastward from Cape Henlopen are from 25 to 30 fathoms, decreasing at half that distance to 15 and 16 fathoms. In the channel, near Cape Henlopen, there are from 14 to 16 fathoms; but, at five leagues East from the cape there are only 9 and 10 fathoms. The greatest danger to a ship cruising hereabout is the shoal called the *Cape May Bank*, heretofore mentioned, and lying at the distance of 4 to 5 leagues East to E.S.E. from Cape May. This bank stretches N.N.E. and S.S.W. about 5 miles, and is one mile in breadth. With Cape May trees W. ¼ N., about five leagues off, there are 4½ fathoms on or near the north end of the bank. During the revolutionary war, the *Santa Margarita* frigate grounded on this bank, with Cape May trees bearing W. by N. when the trees were discernible no lower than from the quarter deck.

M. 1815-14 CAPE MAY BANK and LIGHT-VESSEL. Notice was given, dated Trinity-House, London, on the 16th of October, 1829, that a light-vessel, which had before been stationed off New York, was then moored off the Capes of the Delaware, on the S.W. side of the Cape May Bank, in 7½ fathoms of water, Cape May lighthouse bearing W. 20½° N., distant 15¼ miles; the centre of the *shoalest ground*, on which is found 14 feet of water, bearing N. 28° E. from the light-ship, distant 2¾ miles. "It extends N. by E. ½ E. and S. by W. ½ W. three quarters of a mile, and is half a mile in breadth, and very bold on its eastern edge. There are 12 fathoms at half a mile to the eastward of the shoal water."

But, by a subsequent notice, dated 8th of April, 1830, it appeared that the vessel had been removed from its first situation, as given above, and placed to the north-westward of the Bank. The last notice, as we received it, was very short and inaccurate; but we understand it to mean that the light-vessel lay with the lighthouse on Cape May bearing W. 3° N., 12 miles; Hereford [not Harrifort] Point N.W. ¼ N., 8 miles; the [northern]

[northern] extremity of the Bank, on which there are only two fathoms of water, S.E. 2½ miles.

The light-vessel has two masts, with a lantern on each, kept lighted from sun-set to sun-rise. The vessel is provided with a large bell and clock-work, which in foggy and snowy weather, will be kept sounding at the rate of one stroke in a minute, by which the proximity of the bank may be known.

CAPE MAY and CAPE HENLOPEN, the two extremities of the estuary called the DELAWARE RIVER, bear from each other S.W. by S. and N.E. by N., 11 miles distant. Each is distinguished by lights at night. The lighthouse on Cape May has been described: those on Cape Henlopen are noticed hereafter. A great tract of Overfalls and broken ground, southward of Cape May, is two leagues in extent; the depths over them are from 5 to 15 feet. These shoals form the two channels into the river, of which the chief, between the shoals and Cape Henlopen, is nearly five miles in breadth.

The LIGHTHOUSE on Cape Henlopen is of an octagonal form, handsomely built of stone, 115 feet high, and its foundation is nearly as much above the level of the sea. The lantern is between 7 and 8 feet square; it is lighted with eight lamps; the light is fixed, and may be seen in the night at ten leagues off, if the weather be clear.

At a mile from the high light, and near the sea, is a beacon-light, 35 feet high. The two lights in range is the leading mark for carrying vessels into the Roads, within the cape.

It appears to the Editor, from a comparison of the various charts and descriptions, that the numerous banks, which obstruct the navigation of the Delaware, have long been growing up; and, in particular, that the eastern channel, near Cape May, has been much contracted, leaving a narrow passage for small vessels only; having, where there was formerly five, only two fathoms of water. Those who use it may run in for the cape until within three-quarters of a mile of a conspicuous boarding-house, which stands on the land at about two miles to the eastward of the lighthouse. From abreast of this boarding-house keep the shore on board until you round the cape, leaving the shoal, called the *Great Shoal*, on your larboard hand; the latter is always uncovered at low water, and the sea breaks over it continually. Having doubled the cape you may steer N. by W. and come to an anchor at a mile from the land, in 2½ or 3 fathoms; or otherwise proceed W.N.W., 6 miles, for the main channel of the river, leaving a bank called the *Brandywine*, with a lighthouse upon it, on the starboard side, as shown hereafter.

Besides the lighthouse on the Brandywine there are two other lighthouses up the river; one near the mouth of *Duck Creek*, upon the Delaware or western shore, at 13 leagues above Cape Henlopen; the other near the middle of the river, upon the *Pea Patch*, hereafter noticed, at five leagues above Duck Creek.

The MAIN CHANNEL of the DELAWARE lies to the westward of the shoals off Cape May, and between them and Cape Henlopen; it then extends North to the bank called the Brandywine, which forms its eastern boundary, and is, therefore, to be left on the starboard side; its direction is then N.N.W., leaving a *Fourteen feet Bank* on the larboard, and the *Cross Ledge* on the starboard, hand. By continuing on nearly the same course you leave the *Upper Middle* on the larboard, then an *Oyster Bed* and *Dank's Bar* on the starboard, hand. Having arrived thus far you will see the harbour light at the entrance of Duck Creek, on the western shore, and may pursue a mid-channel course, with the western shore aboard, up to *Reedy Island*, according to the following directions.

To ENTER the CHANNEL by CAPE HENLOPEN.—The course in the fairway between Cape May and the light-vessel, which has been described, is S.W. until the lighthouse on Cape Henlopen bears West. Then steer for it in the latter direction, and within two miles from it you will have 15 or 16 fathoms of water; having passed it, you may steer W.N.W. until you bring it to bear E.S.E. when you may anchor in *Oldkiln* Road, in 3 or 4 fathoms.* The

* See the particular Chart of the Delaware Bay and River. Vessels off the Delaware, upon displaying a jack at the fore top-mast head, may immediately obtain a pilot. Those who are to be depended on are furnished with branches, and a certificate from the Board of Wardens at Philadelphia. The following notice was issued on the 20th of March, 1823. "The risk of coming into our port would be much lessened if captains of vessels would show a signal for a pilot so soon as they see

The Beacon Light on Cape Henlopen, already noticed, exhibits a brilliant light that can be seen at six leagues off. It stands on the extreme north end of the cape, very near the beach, and bears N. ¼ W. three-quarters of a mile from the high light. Vessels running in for Oldkiln Roads, may, when the beacon light and lighthouse are in one, approach the former within a cable's length, then steer W.N.W. until the high light bears S.E. and anchor in 4 fathoms, good holding ground.

To run up the River, bring the high lighthouse South, and steer with it in that direction towards the lighthouse on the Brandywine. You will thus leave the banks called the Shears and the Brown on the larboard side. With flood-tide steer N. by E.; with the ebb N. by W.; as the flood sets in to W.S.W. and the ebb contrary. In proceeding as here directed, about 10 miles, you will come up to a beacon boat, with *one mast*, on the Brown; thence steering N. by W. you will pass, when in 7 fathoms, the lighthouse on the Brandywine at the distance of half a mile; then steer N.N.W. for the upper part of the Brandywine, on which there is a beacon boat with *two masts*.

The next course is N.W. by N. for the lower part of the Fourteen feet Bank, on which there is a buoy. Here you leave the Fourteen feet Bank on the larboard, and the Ten feet Bank on the starboard, side.* The depth between is 6 fathoms. Your course will now be nearly N.W. to the channel between the Cross Ledge and Upper Middle, in a depth of 5 fathoms. The Cross Ledge has on it a beacon boat, with one mast, in summer; and, in winter, a buoy.

Upon the south end of the Upper Middle, which lies on the larboard side of the channel, there is a buoy. This sand extends thence 5 miles, and the course along it is N.W. by N. Depths in the channel, 6 and 7 fathoms, with hard ground. These depths continue, on the same N.W. by N. course, 3 leagues farther, or until you come abreast of the Bombay Hook Light near Duck Creek, having left the Oyster Bed and Danks' Bar on the starboard side, taking care not to advance too near the Banks on either side. With a leading wind, the courses and distances up to *Reedy Island* will now be N.W. by W. 6 miles, and N. by W ½ W. 6 miles. In the latter direction you will have directly a-head, the Pea Patch Light on Fort Delaware, off Fisher's Point, which has been noticed on page 105. With the wind a-head, be very careful to avoid the *Stony Point Ledge*, which lies on the starboard side, as it is steep-to.

Reedy Island to Philadelphia.

In passing Reedy Island, be cautious of a long shoal extending to the North of that island, and one mile and a half in length. When passing it, keep the larboard side best on board. You will next make a small low island on the starboard, which is the site of Fort Delaware and the light above-mentioned. A shoal, the *Pea Patch*, extends nearly a mile and a half to the northward of it, which must be avoided by keeping the larboard side on board, until the river bears N.E. or N.E. by N., when you may stand up for *Newcastle*, which is 10 leagues below Philadelphia.†

From the distance of a mile above Newcastle, give the larboard shore a berth, to avoid a flat extending nearly half a mile from shore. With a fair wind you may then keep up the middle of the river, which winds upwards to Marcus Hook from N.E. to E.N.E., whence the course to Chester Island is N.E. by E. 4 miles.

Chester Island, and a long low point, which lies W.S.W. from it, is to be left on the larboard, giving it a good berth, and thus keeping the starboard shore best on board until arrived at *Billingsport*, a high sandy bluff point: next haul up for *Mudfort*, in sailing towards which you may pass close to a black buoy, which lies in the channel. Run

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see the lighthouse. The Chamber of Commerce and Insurance Offices have established repeating signals at the lighthouse, upon seeing which the pilots would always meet the vessels at the lighthouse; whereas, at present, they frequently show their signal only when abreast of the lighthouse, and then must lie-to, always with delay, and sometimes with danger. The pilots are generally cruising; and, when they are not, this caution is of importance.

* From March to December, a light-vessel, with one light, is moored at the upper end of the Fourteen feet Bank, which bears nearly N.W. by N. 3½ miles from the buoy on the south end.

† Near the channel to the eastward of the Pea Patch there are now two buoys, and one on a small shoal in the passage, to facilitate the navigation of small vessels.

directly

directly for the fort, giving it a berth: when abreast of it, you will see two small islands, between which you must pass; and, having passed them, may haul up N.E. by N. for Gloucester Point, to the distance of a mile from it. In sailing hence, upon a northerly course, for 3 miles, keeping the larboard side best on board, you will arrive off Philadelphia.

PHILADELPHIA, one of the finest cities in the world, is regularly laid out in the narrowest part of the peninsula included between the *Rivers Delaware* and *Schuylkill*, at five miles above their confluence. Its wharfs are commodious and spacious; the principal 200 feet wide, and the water so deep as to allow a vessel of 500 tons to lay her broadside to it. The warehouses are large and numerous, and the docks for ship-building well adapted to their purposes. The streets are broad, well paved, and well lighted, and the provision market unrivalled in America. The houses are generally constructed of brick, three stories high, and without much ornament; but several of the public buildings are superb structures, and among these is to be included a new and splendid naval asylum. The population, in 1830, 31, amounted to 161,412 persons.

TIDES.—THE TIMES OF HIGH WATER IN THE DELAWARE, on the full and change days, are as follow:—At Cape May, 8 h. 15 m. At Cape James, or Henlopen, 9 h. 0 m. At Bombay Hook, 10 h. 30 m. At Reedy Island, 11 h. 15 m. At Newcastle, 12 h. 0 m. At Chester, 1 h. 30 m. At Philadelphia, 3 h. 0 m.

The setting of the tide near the Capes:—First quarter-flood, W.N.W. Second to last quarter, N.N.W. First quarter-ebb, E.S.E. Second to last quarter-ebb, S.S.E. With spring-tides, the vertical rise is from 6 to 7 feet; neap-tides, 4½ to 5½, but varied by the winds.

SECTION IV.

The FREDONIAN COASTS *from the* DELAWARE *to* CAPE FLORIDA.

1.—CAPE HENLOPEN TO THE CHESAPEAKE.

Between Cape Henlopen, in latitude 38° 47′, and Cape Charles in 37° 7′, the coasts of Delaware and Maryland are very low, broken into islands, and bordered with shoals. From a comparison of the old with the modern charts, it appears that the sea must have encroached very considerably upon these coasts within the last half century, and that the shoals generally have increased. The position and figures of the latter can be understood only by reference to the chart, but a few of the most prominent may be here noticed.

In a S.E. direction from Cape Henlopen are the several shoals called the *Hen and Chicken*, the *Cap*, and the *Indian River Shoal*. The last, having 3 fathoms on it, lies at ten miles from the Cape, nearly on the parallel of the inlet called *Indian River*, and six miles from the nearest shore. The *Fenwick Shoal*, of 3 fathoms, lies at three leagues more to the southward, and five miles from shore, in latitude 38° 29′. The *Northern Gull Bank*, of two fathoms, in latitude 38° 15′, at 7½ miles from shore. The *Senepuxen Shoals*, of two fathoms, in lat. 38° 13′, at three miles from shore. The *Southern Gull*, of 5 and 6 fathoms, 5½ miles long, lat. 38° 6′ to 38° 11′, at seven miles from shore. The *Skate Bank*, of two fathoms, in 38° 3′, at two to three miles from the shore. Within all the banks, enumerated above, the coast is a beachy and even shore, forming a lagoon within, called *Senepuxen Sound;* the inlet into which is in latitude 38° 13′, within the Senepuxen Shoals.

South of the parallel of 38°, the shores appear in numerous islets, drowned land, and inlets into which craft only can be admitted; and it so continues to Cape Charles, at the mouth of the Chesapeake. The *Chincoteague Shoals* border the coast from latitude 37° 43′ to 38° 1′, and extend, in some parts, to three leagues from shore. There appear,

appear, in all this extent, no distinguishing marks which can be useful to a stranger, until we arrive in latitude 37° 13′, where a revolving light marks the north end of *Smith's Island*, as will be presently noticed.

Vessels bound from the Delaware to the Chesapeake, should, in order to avoid the *Hen and Chicken*, &c. steer out with the lighthouse of Cape Henlopen E. by S. to the distance of ten miles. They may thence, with an off-shore wind, pursue a S. by W. course for 13 leagues, which will clear the Gull Banks on the west. Thence S.S.W. ½ W., 20 leagues, leads to the parallel of the light on Smith's Island; and the same course continued, eight leagues farther, brings you in sight of the light on Cape Henry, presently described, and bearing W.N.W. In order to avoid the tail of the *Middle Ground*, you run in with the light in that direction, and round the point into *Lynhaven Bay*, or proceed upward, as hereafter directed.

In proceeding along these coasts, during easterly winds, great caution is requisite; as with such winds the weather is generally hazy, and the coast obscured. The current will generally be found setting to the S.S.W., in the direction of the shore.

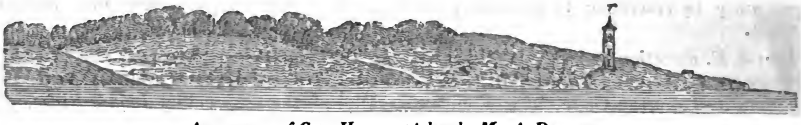
On the courses above prescribed, the soundings will be found to vary from 11 to 15 and 16 fathoms, until approaching Cape Charles, where from 9 to 8 fathoms may be found. At ten miles E.S.E. from Cape Henry are from 10 to 12 fathoms, which depths continue in a W.N.W. direction to the Cape.

Those bound to the Chesapeake from the Ocean eastward, should observe that the greatest extent of soundings from shore is to the eastward of Cape Henry; it being, in that part, between 23 and 24 leagues, with various depths. At the distance of about 7 leagues, and in the latitude of the Cape, there is a bank of 9½ fathoms; between it and the Cape, there are 11 and 12 fathoms; and there is the same depth to some distance without it. The bank is of small extent, and there are 14 and 16 fathoms north and south of it. To the eastward the water deepens gradually to 25 fathoms; it then suddenly shoalens to 20, and again, in like manner, suddenly deepens to the edge of soundings.

The ground off Cape Henry is in general coarse sand, with some gravel; but thence, southward, to Cape Hatteras, it is commonly fine sand, with oaze.

Ships falling in with the land to the northward of the entrance, should not stand inwards to a less depth than 7 fathoms, until they come into the latitude of Smith's Island and Cape Charles, whence they may stand with safety into 5 fathoms. In coming along shore from the southward, 7 fathoms will be a proper depth to keep in, until up with Cape Henry; whence, falling into 8 or 9 fathoms, with a stiff or sticky bottom, you will be in the channel-way.

The Middle Ground, off Cape Henry, now extends more to the southward than formerly, and there are 4½ fathoms, with the light-house bearing W. by S. 5 miles. This bearing, therefore, now leads over the tail of the bank; and the safest course in is with the lighthouse W.N.W. or W. by N. When the lighthouse (*r*) bears W.N.W. ½ W. about 3 leagues distant, it appears as in the subjoined figure.



Appearance of Cape Henry, as taken by Mr. A. Demayne.

When you come in towards the land, to the southward of Cape Henry, you will have deeper water than when you are in the latitude thereof; as 21 fathoms, reddish sand, and pretty large: 9 leagues off it there are 35 and 40 fathoms, fine grey sand.

The land is low and sandy; you cannot see it above 7 leagues off. Cape Henry is low but bluff, with a few trees to the sea-side, at a little distance from the water: it is moderately steep-to, excepting that a small shoal stretches about two cables' length from the shore east of the lighthouse, and there is nothing to hinder a ship from passing into Lynhaven Bay, where there is soft ground, and from 4 to 6 fathoms of water. The bank called the Middle Ground is about 4 miles from the Cape.

When coming in from sea, in the latitude of Cape Henry, 36° 56′, you will meet soundings, as above described. You may readily ascertain when in soundings by the

the muddy colour of the water. In clear weather, the land of Cape Henry may be seen from the depth of 10 or 11 fathoms, regular soundings, which extend 5 or 6 leagues to the southward of the Cape: more to the northward, the soundings are irregular and coarser, as above described.

2.—The ESTUARY, (*commonly called* BAY) *of* CHESAPEAKE, *with its* RIVERS.

THE CHESAPEAKE, one of the finest estuaries on the globe, being 160 miles in extent from north to south, is the recipient of many important rivers, which fall into it on all sides, but especially on the north and west. At its head is the *Susquehanna*, which pervades Pennsylvania; on the N.W. the *Petapsco*, falling from Baltimore; at a degree farther south is the *Patuxent;* then the *Potomak*, which passes the federal city of WASHINGTON; the *Rappahanock*, running downward from Fredericsburg; *York River*, on which are situated York Town and Glocester; *James River*, on which stands the town of Richmond; and, in the south, *Elizabeth River*, the Harbours of Norfolk, &c.

In advancing toward the Chesapeake from the Ocean, the *Gulf Stream* is commonly crossed from the south-eastward, in its narrowest part, near the parallel of Cape Hatteras, or 35° 10′ N. In crossing it thus, the water of the stream, as already noticed, will be found, in *September*, of the temperature of 83 degrees, and thence diminishing to the shore. Even in *December*, over soundings of 19 fathoms, in latitude 35° 19′, with the air at 45°, the water has been found at 68°, after leaving the dark blue ocean for the green water on soundings. The water of the stream, quite warm, had previously sparkled, like fire, along the ship at night; and the air from the waves, breaking at the ship's side, rose in the face of those leaning over, like steam from heated water.

The elevated lighthouse on Cape Henry, in latitude 36° 56′, more particularly noticed hereafter, is an excellent mark for the Chesapeake. Having passed this cape, in sailing upward, in the main stream, low banks, fringed with trees, are all that is to be seen of the country, excepting here and there a house near the shore, and occasionally a lighthouse, small town, or village. Ten thousands of wild ducks, geese, swans, &c. cover the estuary and neighbouring rivers.

It should be observed, generally, that, in the Chesapeake, all the low points, both of Virginia and Maryland, have shoals extending from them; and should, therefore, have a good berth in passing, the water being shoal.

LIGHTHOUSES and LIGHT-VESSELS in the CHESAPEAKE, &c.—The numerous Lights in the Chesapeake tend very much to facilitate the navigation of this arm of the sea: and it may be as well to take a general view of them before we enter on the particular directions.

SMITH'S ISLAND.—The first lighthouse connected with this navigation is without the entrance, on the north end of Smith's Island, at ten miles N.E. by E. from the extremity of Cape Charles, and twenty miles N.E. by N. from Cape Henry. It stands in latitude 37° 13′, and exhibits a *revolving* light.

CAPE HENRY.—A Lighthouse, with *fixed* light, elevated at 120 feet above the level of the sea. There is a house near it for the accommodation of pilots. The appearance of it is given in the preceding page, 108.

HAMPTON ROADS.—A Light-vessel on the north side of *Willoughby's Bank*, exhibiting *two lights;* to be left on the larboard side by vessels entering Hampton Roads. It bears from the lighthouse on Cape Henry W.N.W., distant 13 miles.

OLD POINT COMFORT.—A Lighthouse, with *fixed light*, two miles west from the Willoughby floating light. Depths of water, in the channel between, 10 to 16 fathoms.*

CRANEY

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* The coast within Cape Henry forms the slender bay called *Lynhaven Bay*, extending 2½ leagues nearly East and West. Vessels bound hence for Hampton Roads proceed by Willoughby's Bank, as above, and thence haul into the Roads.

HAMPTON ROADS were visited by *Captain Basil Hall*, in February 1828, and he describes the anchorage as formed by the confluence of three streams, the James, Nansemond, and Elizabeth, Rivers; though impeded by shoals caused by the deposits of these united floods, it has sufficient space to render it a place of great importance as a naval station.

On

CRANEY ISLAND FLAT, at the mouth of *Elizabeth River*:—a vessel in 4 fathoms, with a light at her mast-head.

NEW POINT COMFORT, the N.E. point of the entrance of MOBJACK BAY: a Light-house, with *fixed light*, at 25¼ miles N.N.W. ½ W. from that on Cape Henry, which line of direction clears the shoals on the west.

WINDMILL POINT, at the entrance of the Rappahanock:—a light-boat at the extremity of the shoal, nearly three miles S.E. from the nearest shore.

TANGIER SOUND, on the eastern side of the Chesapeake:—a Lighthouse on *Little Watts Island*, at the south-eastern extremity of the Sound; and another on *Clay Island*, at the northern extremity of the same.

SMITH'S POINT, the southernmost extremity of the RIVER POTOMAK:—a Lighthouse with a fixed light, at 16 miles to the northward of Windmill Point. On the edge of the shoal, which stretches three miles E.S.E. from the Point, is a Light-vessel, moored in 4¾ fathoms, which exhibits two distinct lights.

POINT LOOKOUT, the north point of the mouth of the POTOMAK:—a small Lighthouse or beacon light, bearing N. by W. ½ W., 11 miles from the lighthouse on Smith's Point.

SMITH'S ISLE, the largest of the TANGIER ISLANDS, opposite to the mouth of the Potomak:—a Lighthouse on Fagg's Point, the N.W. point of this island, at the entrance of *Kedge's Strait*, with a *fixed light*, from which that of Smith's Point bears S.W. ½ S. 12 miles, and that on Point Lookout W. ½ N. 10½ miles.

HOOPER'S STRAIT:—A Light-vessel within Hooper's Strait, for making the harbour within Hooper's Island, as shown hereafter.

COVE POINT, four miles to the northward of the mouth of the Patuxent:—*a Light-house said to be building in* 1827.

THOMAS POINT, on the north side of South River, five miles below Annapolis, and 34 miles north from Cove Point:—a Lighthouse with *fixed light*. From the shore hereabout the shoal extends southeastward to the distance of two miles.

PETAPSCO or BALTIMORE RIVER:—On *Bodkin's Point* or *Isle*, upon the south side of the entrance, and surrounded by an extensive shoal, is a *fixed light*; and, on the North point of the river are two Lighthouses, with brilliant fixed lights, which are the leading lights for the Petapsco, when nearly up with Swan Point on the eastern shore.

POOL'S ISLAND, 12 miles N.E. by N. from Bodkin's Point:—Lighthouse with fixed light, between the entrances of the Gunpowder and Bush Rivers. There is also a tower, with bell and machinery, near the same, to warn those approaching the Bank in thick weather.

TURKEY POINT, at the mouth of the Elk River, 17 miles N.E. by E. from Pool's Island:—a *fixed* light.

CONCORD POINT, at the mouth of the Susquehanna, near *Havre de Grace*, 6½ miles N.N.W. from Turkey Point:—a fixed light.

SAILING DIRECTIONS for the CHESAPEAKE.—In coming in for the Chesapeake, you may advance to Cape Henry upon the courses already described, but cautiously avoiding the *Middle Ground*, which occupies so large a portion of the entrance, and which may be still increasing. With a northerly wind you may approach this bank to the depth of 5 fathoms. To the southward of it you will find 12 and 13 fathoms, as well as in the channel between it and Cape Henry. This channel has a depth of 8 fathoms close to the Cape.

On *Old Point Comfort*, a low sandy point, is *Fort Monroe*, intended to mount 340 guns. Every part, says Captain Hall, is finished with great neatness and beauty. The fortress will cover an extent of about sixty acres, and admit a garrison of 5000 men, forming a rallying point for the militia and other troops.

On the *Ripraps* [west of Willoughby Bank] at a mile south from Fort Monroe, a powerful battery was constructing, on which 260 heavy guns were to be placed, the fire from which will cross that of the larger fort.

At *Gosport*, opposite to Norfolk, on Elizabeth River, is a national dock-yard: and here were building a ninety gun ship and a large frigate, rated as a 74 and a 44. The *Delaware*, a line of battle ship, lay at the time, ready for sea, in Hampton Roads.

To the southward and eastward of Norfolk lies the *Dismal Swamp*, a thick stratum of peat moss, under which, at the depth of about 15 feet, is a bed of sand. It is covered with forests of pine, juniper, and cypress. A canal is cut through it, which communicates with Currituck Sound.

With

With a fair wind, you may run in with the lighthouse bearing W. by N.; and, with a turning wind, you may stand to the southward until it bears N.W. by N., and to the northward until it bears West.

If requisite, you may run in with the lighthouse bearing West, as this course will lead to the channel-way, in from 7 to 10 fathoms, sticky bottom, as before mentioned. It is then proper to take soundings towards the southern shore; and, in order to this, steer West, until you have advanced to a short distance from the lighthouse; then, rounding the point, you may haul into *Lynhaven Bay*, and drop an anchor as most convenient, in from 7 to 4 fathoms.

The navigation hence to Hampton Roads has been greatly facilitated by the lighthouse on *Old Point Comfort*, on the north side of the entrance of James River; two miles to the eastward of which is the floating light, on the north side of *Willoughby's Bank*, which forms the south side of the channel. These were the more necessary, as the channel appears, from a late survey, to be much more contracted than formerly; the northern bank, called the *Horseshoe Flat*, having extended itself to the S.E., while the shoals on the south have also increased. *The light on Point Comfort is fixed*, and bears W.N.W. ½ W. 5 leagues from that of Cape Henry. The east end of Willoughby's Bank lies on the same bearing, at 3½ leagues.

The *floating light*, on the north side of Willoughby's Bank, lies in 3½ fathoms, with Point Comfort light bearing W. ¼ N. 2 miles; Black River Point N. ¼ W. 5 miles; Cape Henry light E.S.E. ¼ E. 13 miles; Willoughby's Bluff S.S.E. 2 miles; and the Ripraps, on the south side of the channel, W.S.W. 3 miles.

If proceeding for Hampton Roads, and coming in by Cape Henry, without a pilot, with a free wind and commanding breeze, during either the ebb or flood, bring Cape Henry light to bear E.S.E., and steer W.N.W. until you get soundings on the Horseshoe Flat, in 7, 6, or 5, fathoms. There are no soundings at 5 fathoms on the courses between Cape Henry and the bank. The first soundings on the latter will be 6 or 7 fathoms, with a sticky or tough bottom, at about four miles from Cape Henry light; but the five fathoms bottom, sandy, is about a mile farther; and here a vessel may anchor. The course hence is West, until you get on the south side of the channel, with an ebb-tide; with flood steer W. ½ N. or W. by N. These courses will lead into 5 fathoms, on the south side, whence you steer W.N.W. into 6 or 7 fathoms, or up to the floating light on Willoughby's Bank, where the bottom is sticky or stiff. Next bring the lighthouse on Old Point Comfort to bear West, or W. by S., and run for it until nearly up with it, or to within the distance of half a mile. In proceeding hence to the S.W., take care not to advance nearer to Hampton Flats, on the north side, than in 10 fathoms, the edge being steep-to. Now haul up S.W. by W. till the lighthouse on Old Point Comfort bears about N.W., then steer S.W. for Hampton Roads, where there is good anchoring in 5, 6, or 7, fathoms. With the lighthouse N.E. five miles, there are 4 and 5 fathoms.

For proceeding from Hampton Road, up Elizabeth River, to Norfolk, a pilot is indispensible.

Should the floating light on the north point of Willoughby's Bank be gone, you may know when you have passed that point by the increasing depth of water, as 9 or 10 fathoms, or more, will be found: previously to this, if you shoalen your water on the south side, from 5 fathoms, haul off to the northward, and proceed in 6 or 7 fathoms until nearly up with the point of Willoughby's Shoal: approach the latter no nearer than in 7 fathoms. On hauling northward, more water will be found.

On the Horse-shoe side of the entrance, the bottom is of hard sand: the mid-channel has a soft bottom, but Willoughby's Bank, again, is of hard ground. From the south-side, where the ground is soft, you may, therefore, always know when you are approaching Willoughby's Bank, by the change in the soundings.

It is also to be noticed that there is, on the south edge of the Horse-shoe, a small shoal, called the *Thimble*, at a little below Willoughby's floating light, on the opposite side of the channel. It has about 2 fathoms over it. From abreast of the shoal, Black River Point bears N.N.W. There is good anchoring on all parts of the Horse-shoe, at from 3½ to 4 miles from land, and thence to the Tail, or outer part, and nearer in-shore for small vessels. The setting of the tide varies considerably, and requires particular attention.

PILOTAGE.—It is requisite that a stranger bound to Hampton Roads should understand that, if bound into Hampton Roads, and being so far in as to bring Cape Henry light to bear S. by E. before you receive a pilot, a Hampton pilot cannot demand more than half pilotage, which is six dollars; twelve dollars is full pilotage, for large or small vessels, up to the roads; after that is another pilotage, at the rate of 88 cents per foot.

TIDE.—*The flood-tide* runs in round Cape Henry and into Lynhaven Bay until 11 o'clock on the full and change; and, out of the way of the Chesapeake stream, it flows at 10; in Hampton Road, at 10½. The tide varies considerably in its direction, according to the time from ebb or flood. The ebb from James and York Rivers sets over the Middle Ground to the eastward, which renders the navigation thereabout dangerous in the night. At the entrance of Elizabeth River the rise of tide is only 3 or 4 feet.

CAPE HENRY or LYNHAVEN BAY to YORK RIVER.—In sailing from this bay for York River, you may safely bring Cape Henry S.S.E., which leads over the tail of the Horse-shoe, in 5 or 6 fathoms. This part of the shoal lies in ridges, so that you will frequently find more than a fathom difference at a cast, but without danger. The ebb tide down the bay sets over it to the southward.

On the tail, and along the N.E. side of the Horse-shoe, the shoalings are gradual, but the western side of the Middle Ground is steep. In proceeding onward, you should not steer from the cape to the northward of N.N.W., allowing for tide and wind, lest you get upon the latter. You may thus steer until Cape Charles bears East, and may then steer N.W. by N., N.W., or N.W. by W., according to wind or tide. You must be very cautious, in a northerly wind, when standing towards the Horse-shoe, especially with the ebb, which sets strongly over it, as already noticed.

You will now advance toward the *lighthouse, with a fixed light,* on *New Point Comfort,* upon the eastern side of Mobjack Bay. With this point bearing N.N.W., and Back River Point S.W. by S., you will approximate to the York Spit, in 5 or 4 fathoms, and may proceed N.W. by W. for the river. In advancing, you must not run in for the shore nearer than to 5 fathoms, until you have entered the river above the marsh; then proceed in 9 or 10 fathoms, and run up and anchor between York and Glocester, in what depth you please.

When turning up, with a contrary wind, stand towards the Horse-shoe to 5 or 4½ fathoms, and from it to 6½ or 7 fathoms, until abreast the entrance of Pocosan Creek, near the mouth of York River. Be cautious of standing too far in, lest you touch on the shoal extending from Tooes Marsh. When thus far advanced, approach no nearer to the south side than the depth of 7 or 6½ fathoms, between this and the town of York. On the opposite side you should not stand towards the small isles, called York Isles, lying off Monday's Point, nearer than 11 or 10 fathoms.

Close to the extremity of York Spit there is a depth of 7 fathoms, close to the middle of it there are 10 fathoms, and close to its N.W. part, near the York Isles, there are 13 fathoms; being all steep-to. Within this, the flat from the north shore extends nearly one-third over the river, and should not be approached nearer than in 9 or 8 fathoms.

CAPE HENRY to MOBJACK, or NEW COMFORT BAY.—You may proceed from Cape Henry, over the tail of the Horse-shoe, &c., as above directed, for sailing towards York River. Bring the lighthouse on Cape Henry S.S.E., and steer N.N.W. about 5 leagues, or until you are 5½ leagues from the cape: at this distance Cape Charles will bear E.S.E. ¼ E., and you will be abreast of the north end of the Middle Ground. With a turning wind you should not stand farther to the eastward than with the lighthouse on Cape Henry S.S.E., or you may be in danger of the Middle Ground, as before observed. To the westward you may pass into 5 or 4½ fathoms with safety; but, to the eastward, into not less than 8.

A shoal Spit extends to the S.E., 5 miles from New Point Comfort, which must, of course, be cautiously avoided. Between this shoal and York Spit you may run in, and anchor under the point, in 4 or 5 fathoms, fine bottom, and lie securely from northerly and N.E. winds.

The four rivers which empty themselves into Mobjack Bay, namely, the *Severn, Ware, North River,* and *East River,* are navigable to vessels of 50 or 60 tons burthen, and are places of considerable trade.

The direct bearing and distance from Cape Henry to the lighthouse on *New Point Comfort* are N.N.W. ½ W. 8½ leagues. The passage by night is dangerous, owing particularly

ticularly to the tide of ebb, which sets irregularly over the Horse-shoe, and sometimes deceives those best acquainted with this navigation.

In *Mobjack Bay*, vessels at anchor are exposed to winds blowing in any direction between E.S.E. and S.S.E.; but, when thus incommoded, they may go into the River Severn, on the west, where they will lie safely. On sailing in, bring the lighthouse of New Point Comfort E. by S., and steer W. by N. until the entrance of the river bears W.S.W.; you may then steer in W.S.W. or S.W. by W., and be land-locked from all winds.

In running for the river, you descry two clumps of trees on the larboard, which, at first, make like islands, but on a nearer approach the difference will be found. Keep in the middle, and with the lead going; thus passing between two points of marsh, you will carry 3 fathoms all the way over a muddy bottom. Vessels for sea may pass from this river with the wind from any point between N.W. and S.W.

NEW POINT COMFORT to POTOMAK RIVER.—You may avoid the Spit, which extends to the S.E. from New Point Comfort, by not running into less than 4 fathoms of water.

At about 2½ leagues N.N.E. ½ E. from New Point Comfort, lies the *Wolf-trap Rock*, over which there are only 12 feet at low water. There are 7 fathoms near the rock. From the spit, extending off the point, to the entrance of Rappahanock River, the mid-channel course is N. ½ W., and the distance 17 miles; thence to a flat, extending to the south-eastward from Smith's Point, the course and distance are North above 5 leagues.

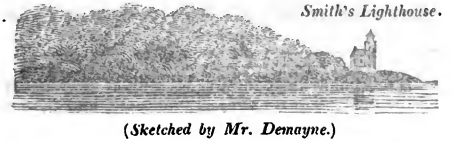
Windmill Point is remarkable, and it appears, when bearing W. ¾ S., 7 miles distant, as represented beneath.

View of Windmill Point, at the North Entrance of the Rappahanock.

This Point is just half-way between New Point Comfort and Smith's Point. The Windmill Reef now extends 4 miles from the Point to the S.E. by E., and forms a broad shelf of 2½, 2, and 1½ fathoms, thence shoaling to the dry shore. On its extremity is the light-boat, mentioned in page 110, which is, of course, to be left on the larboard side.*

The lighthouse on Smith's Point, which is the S.E. extremity of the River Potomak, exhibits a *fixed* light. From the point a shoal extends to the E.S.E. three miles, as noticed on page 110; and here a light-vessel is stationed, which exhibits two lights.

When *Smith's Island Point Light* bears nearly N. by W. ¾ W. 9 miles, and appears as represented in the annexed figure, with a house on its west side open, it leads in a fair-way up the channel, equally clear of the shoals to the East and the West.



(*Sketched by Mr. Demayne.*)

In sailing from off New Point Comfort, on the course N. ½ W., you may run along in 5 or 6 fathoms; and, after passing Windmill Point, in from 5 to 7 fathoms. Towards Smith's Point you should not, however, approach to less than 7 fathoms.

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* *Should the weather render it necessary to take shelter in the Rappahanock*, you leave the light-boat off Windmill Point on the starboard hand, and the mouth of the *River Piankatank* on the larboard; you will thus run up W.N.W. and shoalen your water from 6 or 7 to 3 fathoms. On approaching *Stingray Point*, which divides the two rivers, keep to soundings on the larboard from 3 to 6 fathoms, and not deepen to more than 6, when standing to the northward. You will thus avoid the flat surrounding Windmill Point, which is very steep. Keep over to the southern shore in the depth above mentioned; and, having entered, you may edge to the northward, and anchor in 7 fathoms, good ground, and secure from all winds.

The River Potomak separates Virginia from Maryland; its entrance being formed by Smith's Point on the south side, and Point Lookout on the north. The distance between the two points is more than 3 leagues. On Point Lookout there is now a beacon-light, as noticed in page 110.

If bound hence into St. Mary's River, within the north side of the Potomak, give Point Lookout and the shore about it a good berth; and, on approaching St. George's Island, (8 miles above Point Lookout) keep nearer to the main on the larboard than to the shoal extending from that island. The course into the river is nearly N.W., and you may anchor where you please in 5 or 6 fathoms, the river being all open.

If bound to Wicomico, 5 leagues higher up the Potomak, the course and distance from the east end of St. George's Island, past Ragged Point, are N.W. ½ W., and the distance nearly 3 leagues. On the south or larboard side, flats extend from the shores, in some places, to the distance of a mile, and should be approached no nearer than in 6 fathoms. In the mid-channel you will find 11, 10, 12, 10, and 8, fathoms. In passing Ragged Point, you must give it a good berth, in order to avoid the shoal, which stretches from it. Above Ragged Point, in the middle of the channel, there are 6, 5, 4½, and 7, fathoms of water. You will next advance on a W. ½ N. course to *Clement's* or *Blackstone's Island*, passing Nominy Bay on the larboard hand. From abreast of Clement's Island, you may steer W.N.W. in 6, 5, and 4, fathoms, until you have Wicomico River open; then pass pretty near to the island, which is on the east side of the entrance, in order to avoid the shoal stretching from the point on the western side. Steer into the river about North, and anchor on the south side of *Newton's Point*, in 5 or 4½ fathoms.

The distance from Ragged Point to the city of Washington is about 24 leagues: and to those unacquainted with the river a pilot is indispensible.*

POTOMAK RIVER to the RIVER PATUXENT.—In sailing from the entrance of the Potomak to that of the Patuxent, you must be careful to avoid the flat already described, which extends from Point Lookout, by not going into less than 6 or 7 fathoms. Opposite to this point the flats from the *Tangier Islands* extend so far to the westward as to narrow the Chesapeake Channel to a breadth of about 5 miles. This part of the eastern flats is steep-to, having 12 fathoms close to it, to the west of the lighthouse, on the N.W. point of Smith's Island, called *Faggs Point*, which stands as shown on page 110.

In sailing between Point Lookout and the entrance of the Patuxent, a good depth to keep in is 7 and 8 fathoms. On the eastern side, near the flat, there are 10, 12, 9, and 10, fathoms.

Cedar Point, the S.E. point of the Patuxent, is low and sandy, and has some straggling trees upon it. A flat extends about the point to the eastward and northward. The north side of the river may be known by the high lands called the *Cliffs*, having trees upon them: from this side, as well as from the other, there is a flat, but the shoalings on each side are gradual, and the bottom soft. In mid-channel there is a depth of 8 to 10 fathoms.

Within Cedar Point, on the south side, is *Rously's* or *Hog Point*. On the north side

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* The River Potomak is navigable for frigates as high up as Washington, which is 90 miles above Point Lookout; but the navigation is extremely intricate, and nature has done much for the protection of the country, by placing about one third of the way up [between the Wycomico and Cedar Point] very extensive and intricate shoals, called the *Kettle-bottoms*; they are composed of Oyster Banks of various dimensions, some not larger than a boat, with passages between them. The best channel is on the Virginian shore, but the charts give no marks nor directions. The Fredonian frigates never attempt it with their guns in, and they make a tedious passage from the naval yard at Washington to the mouth of the Potomak.—(*Notes of an Officer*, 1814.)

Mount Vernon, the noted retreat of the illustrious Washington, is on the Virginian side, 16 miles below the capital. At the opposite end of the reach, 4 miles above Mount Vernon, on the Maryland side, is *Fort Washington*, a fortress of some strength, but which was blown up in 1814. The populous town of Alexandria, in Virginia, eight miles below the city of Washington, is the mercantile capital of this river.

Captain *Basil Hall* visited the city of Washington in December, 1829; and he describes it as possessing numerous objects of attraction. He remained there for a month, and found Society agreeable, kind, and hospitable. In January he glided down "the *muddy Potomak* in a steam boat, through myriads of canvas-backed ducks," and then visited the pretty little town of Fredericksburg. The present population of Washington is about 20,000 persons.

of

of the entrance is *Drum Point*. The latter is low and sandy. Without these points you may anchor; or, passing between them, proceed farther up the river.

Having arrived to the eastward of Point Lookout, with the wind a-head, you will have a good channel to beat in up to the Patuxent, and may stand to either side into 4 or 5 fathoms; but, observe that, when standing to the eastward, it is proper to tack when you have gained 9 or 10 fathoms, and the ground suddenly shoalens to 5 or 4 fathoms, and thence to 2 fathoms, hard sand. On the western side the soundings are more regular.

The course and distance from Point Lookout to the entrance of Patuxent River are N. by W. ½ W. 5 leagues. The depths 7 to 8 fathoms, up to Cedar Point. Should it be requisite to anchor, and you cannot get into the Patuxent, which frequently happens with northerly winds, you may run in under Cedar Point, and anchor in 3 or 4 fathoms, good ground.

The entrance of the Patuxent is remarkable from its having very high land on the north side, with red banks or cliffs. You may enter the river by the preceding directions; or, give Cedar Point a berth, and stand to the northward until you have the river open, when you may run in for Drum Point on the starboard side, which is sandy and bold, with some bushes on it. Double this point, and come to in 3 or 2½ fathoms, where you may lie securely.

In beating in or out of the Patuxent, you may stand towards the north side, against the high cliffs, into 3 fathoms, and towards the south side to 5 fathoms, of water. In the channel there are 7 fathoms. When standing towards the south shore, you will perceive some buildings on the north side, above Drum Point; and so soon as these buildings come on with that point, you must tack, in order to avoid the shoal which extends from the south side at the entrance.

HOOPER'S STRAIT.—Below the Patuxent, on the eastern side of the Chesapeake, is the inlet named *Hooper's Strait*, formed by the bank of *Holland's Islands* on the south, and that of *Hooper's Island* on the north. Within this Strait is stationed the Light-vessel mentioned in page 110. The directions for entering this place, as *officially* given, in January, 1828, were as follow:—If running upward, bring the light to bear E. by N. and stand for it, which course will take you across Hooper's Island Bar in about 4 fathoms of water. Continue on until you deepen into 7 fathoms; then steer E.N.E. until the Light bears East, and run for it: pass the light on your starboard hand, which will carry you into the harbour.

If coming down the Chesapeake, bring the light to bear N.E. and steer for it, when you will gradually shoalen your water on the south side. You may, with safety, course round the bar or shoal in 3 fathoms, until you bring the light to bear East, then steer as above.

In thick weather, whether by night or day, a bell will be rung on board the light-vessel, at short intervals, and if thick and blowing it is ordered to be kept constantly ringing, in order to warn those approaching.

RIVER PATUXENT to ANNAPOLIS.—On leaving the Patuxent, and being bound up the Chesapeake, toward Annapolis, you must give a wide berth to the cliffy land southward of *Cove Point*, as a flat extends from it to the distance of half a league. On the edge of this flat there are 2½ and 3 fathoms; but there are 10 at no great distance. On sailing out run eastward into the main stream until you have 9 or 10 fathoms of water, when you will be near mid-channel: the course and distance hence, up to Poplar Island, are N. ½ W. 9 leagues. In running thus, you will have 10, 9, 8, 7, and 10 fathoms.

SHARP'S ISLAND.—In proceeding as above you will pass *Sharp's Island*, lying off the eastern shore at the entrance of *Choptock River*, and eight miles to the southward of Poplar Island. Sharp's Isle is three miles long, and surrounded by a shoal more than a mile broad; but with an adverse wind good anchorage under it may be found. The similar isle, called *James Island*, lies 5 miles S. by E. from Sharp's Island, and is likewise surrounded by a shoal. To gain the anchorage under Sharp's Island, having passed James's Island Point, steer to the N.N.E. which will carry you in under Sharp's Island, when you may anchor at about half a mile from the island, secure from northerly and N.W. winds. There are pilots who may be engaged at this place.

From

From the channel west of Poplar Island, a N. by E. course, to the distance of 4½ leagues, will carry you up to the Severn, or Annapolis River. Should the wind oppose you when up with the south end of Kent Island, you may run in under it, to the north-eastward of Poplar Isle, and anchor in 6 fathoms, secure from all winds, except from those from the south-westward.

From the River Patuxent to that of Annapolis, the western side of the bay is rather high; but the soundings are generally gradual. In running from Poplar Island to *Talley's* or *Annapolis Point*, (the southern point of the entrance to Annapolis,) you will have from 7 to 8 fathoms; but you must observe to give a good berth to Talley's Point, as well as to Thomas Point, lying more to the southward, as there is a long spit from each.

Upon Thomas's Point, on the north side of South River, at five miles below Annapolis, there is now a lighthouse, with *fixed* light. From the shore hereabout the shoal extends outward, to the distance of two miles.

When sailing into Annapolis River, having given Talley's Point a berth, haul in to the westward, for the mouth of the river, taking soundings off the south side, in 3 or 4 fathoms: thus you will pass in between Talley's and Greenberry Point: keep nearly midway between each. Just above these points you may anchor in 3 or 4 fathoms, secured from all winds.

BALTIMORE.—*From the middle of the channel, east of Annapolis*, the course and distance are N.N.E. and N. by E. 4½ leagues. This leads up to the entrance of the *Petapsco*, or Baltimore River.

In sailing as above, between Annapolis and Baltimore River, you will find from 4 to 9 fathoms of water. You should go no nearer to the western side than in 4½ or 5 fathoms, until the river comes open, and Swan's Point bears about E.S.E., when you may haul in for the river.

PATAPSCO or BALTIMORE RIVER.—The entrance of this river is shoal, and its navigation rather intricate. The best mark for sailing in is, a gap in the woods on Sparrow's Point a little open of North Point: this will lead in the best depth, which is 3 fathoms, on a soft bottom. This mark is to be kept on until Bodkin Point bears S.S.W., when you steer West or W. by N. into the river, giving North Point a berth of about a mile.

There is now a *fixed light* on Bodkin Point or Isle; and on the *North Point* are two lighthouses, with fixed lights, which are leading lights for the Patapsco, when nearly up with Swan Point, on the eastern shore. These lights in one, bearing W.N.W., not only lead into the river, but are a good mark for anchorage in the Outer Road, in 4½ and 5 fathoms, with Bodkin Point W. by S.

There is an Inner or Swash Channel leading into the Petapsco, within the Outer Bodkin Shoals. A hard knoll or oyster bank, one of these shoals, has less than 7 feet over it, and from this knoll the Bodkin lighthouse bears N. 41° W., the bluff of Sandy Point S. 9° W., and two light green trees, appearing as one, standing over a red bank, S. 84° W. distant two miles. A small mast-buoy, with an O upon it, painted black and white alternately, is placed on its northern edge, and will, therefore, be seen on passing.

The Petapsco is now regularly buoyed with spar or mast-buoys, which display an erect mast of from 9 to 20 feet above the water. The buoys are distinguished from each other by numbers; and are, some entirely white, others entirely black, and the rest striped black and white alternately. On going up the river, the black buoys are to be left on the north or starboard side, and the white on the south or larboard, while the striped buoys denote the knolls that lie in the channel-way. The Directions which follow were written before these buoys were placed.

From abreast of North Point, steer for the *White Rocks*, which lie on the south side of the river; and, when abreast of them, haul more to the southward, until you bring *Leading Point*, on which are high bluff woods, within two sails' breadth of *Hawkin's Point:* keep it thus until you are nearly abreast of the rocks: then haul again to the southward, until you bring those points within a small sail's breadth of each other, which will lead up to Hawkin's Point, and to which the berth of a quarter of a mile must be given.

There

There are several small steep shoals, of about two fathoms on either side of the channel, and the channel between them is not more than a quarter of a mile wide. When you came up with Hawkin's Point, you may steer about N.W. by N. for the Narrows, without obstruction, until abreast of the Fort, and will have from 2½ to 5 fathoms. When up with the Narrows, and passing between the two points, give the larboard side a good berth, so as to avoid the shoal which lies just above the Narrows. You may now haul to the S.W. for the wharfs on the point upon the larboard side, and there anchor, or proceed up to Baltimore.

In leaving the point, keep the larboard shore on board, when you will find good bottom, from which you may proceed to the wharfs, or come-to in safety.

BALTIMORE is 3½ leagues above the north point of the entrance. It is the third city in population, and the fourth in consequence, in the United States. It stands on the north side of a basin formed by a narrow arm of the Petapsco, which constitutes a safe and convenient harbour. The entrance is defended by a fort and battery. A rivulet, called *Jones's Falls*, divides the city into two parts, called the *Town* and *Fell's Point*, which are connected by bridges. At Fell's Point there is water enough for vessels of 500 tons, but none larger than 200 can go up to the city.

In December, 1827, Captain *Basil Hall* was accommodated at a large and commodious hotel in Baltimore. At this time the late Chas. Carroll, of Carroll town, then in his 91st year, was the only survivor of the statesmen who signed the declaration of Independence, in 1776, in full possession of all his faculties, and "with all his thoughts fresh and elastic." Within his memory Baltimore was a village of seven houses only. It now contains 80,500 inhabitants, though restrained by the increasing prosperity of New York.

PILOTAGE.—American [Fredonian] vessels pay 3 dollars down, and 4 dollars up, per foot: foreign vessels, 4 dollars down, and 4 *dollars* 33 *cts.* up, per foot.

SUMMARY of the COURSES and DISTANCES up the FAIRWAY of the CHESAPEAKE, from CAPE HENRY to HAVRE DE GRACE, a port of Entry at the mouth of the River Susquehanna.

[*Due allowance to be made for ebb or flood, wind, &c.*]

Enter with Cape Henry Lighthouse W. by N. or W.N.W. distance about 3½ leagues.

Cape Henry Lighthouse bearing S.S.E. until Cape Charles bears E. by S. 8 miles; passing the Horse-shoe Flat on the west, and the Middle Ground on the east;—

Course, N.N.W., distance 14 miles. Soundings, 9, 8, 7, 6, fathoms.

Cape Charles bearing E. by S. 8 miles, to Windmill Point, W.N.W. 8 miles; leaving New Point Comfort Light, the Wolf-trap, &c. on the west;—

Course, North, distance 23 miles. Soundings, 6, 7, 6, and 8, fathoms.

Windmill Point, W.N.W. 8 miles, to the south end of Tangier Islands E. by N. 8 miles, leaving the Tangier Bank and bordering shoals on the east;—

Course, N. by W., distance 4½ leagues. Soundings, 7 to 12 and 16 fathoms.

South end of Tangier Islands, E. by N. 8 miles, to Smith's Point Lighthouse West, 5½ miles.

Course, N. by E. ¼ E., distance 7 miles. Soundings, 16, 12, 7, 16, and 12, fathoms.

Smith's Point Lighthouse, West, 5½ miles, to the Beacon Light on Point Lookout bearing W.N.W. 5 miles; crossing the Mouth of the Potomak;—

Course, N.N.W. ½ W., distance three leagues. Soundings, 12, 10, and 8, fathoms.

Point Lookout, W.N.W. 5 miles, to Cove Point, above the Patuxent, bearing W.N.W. 4 miles;—

Course, N. by W., distance 20½ miles. Soundings, 8, 7, 8, and 10, fathoms.

Cove Point bearing W.N.W. 4 miles, to the centre of Poplar Island, East, 3½ miles;—

Course, N. by W. ½ W., distance 8 leagues. Soundings, 10, 12, 10, 7, and 6, fathoms.

Poplar Island, East, 3½ miles, to the north end of Kent Island E. by N. 3 miles; passing the Light on Thomas Point and Annapolis River on the west;—

Course, N. by E. ½ E. distance 19 miles. Soundings, 6, 8, 11, 12, 6, and 7, fathoms.

North end of Kent Island, E. by N. 3 miles, to the Outer Road of the Petapsco or Baltimore River, in 4½ and 5 fathoms; lights on North Point in one;—

Course, North, distance 8 miles. Soundings, 7, 5, 7, and 5, fathoms.

Outer

Outer Road of the Petapsco, to Pool's Island Light, bearing W. by N., 2 miles;—
Course, N.E. by N., distance 3 leagues. Soundings, 5, 6, 8, and 7, fathoms.
Pool's Island Light, bearing W. by N. 2 miles, to Turkey Point and Light at the mouth of Elk River;—
Course, N.E. ½ E., distance 16 miles. Soundings, 7, 9, and 6, fathoms.
From 6 fathoms, off Turkey Point, to the mouth of the Susquehanna;—
Course, N.N.W., distance two leagues. Soundings, 5, 3, and 2, fathoms.

3.—CHESAPEAKE TO CAPE HATTERAS.

From CAPE HENRY, in latitude 36° 56′ to CAPE HATTERAS, in 35° 14′, the coast forms a concavity in the greater part of its length, to the latitude of 35° 40′, trending nearly S.S.E.; and the rest inclines a little to the westward of south to the extremity of the cape, now represented in longitude 75° 27′ W. It is all low, and bordered with narrow isles, at the back of which are *Currituck Sound*, *Albemarle Sound*, *Pamtico Sound*, &c. From the extremity of Cape Hatteras, a bank of dangerous shoals extends eight miles to the S.E., and at 5½ leagues N.N.E. from the cape, is another called the *Wimble Shoals*; the latter extend six miles from the nearest shore; but, between them and Cape Henry, although the shore is low, it is generally clean, and a vessel may approach, with westerly winds, to the depth of 7 fathoms.

The distinguishing objects, by which the points of this coast may be known, are few, and represented as follow:—

A cluster of trees, called *Wash Woods*, seven leagues S. by E. ½ E., from Cape Henry, in latitude 36° 35′. *Currituck Inlet*, a shoal entrance into Currituck Sound, three leagues farther, in the same direction, lat. 36° 26′. *A windmill* in latitude 36° 20′, 6½ miles from Currituck Inlet. Another windmill in lat. 36° 15′, four leagues from Currituck Inlet. *Three Sandhills* in lat. 36° 5½′, and a larger one, the *Nag's Head*, in 36° 1′.

In latitude 35° ~~12~~ 37′, and longitude ~~34° 22~~ 75° 26′, is the bar of the *New Inlet of Pamtico Sound*, over which there are 5 feet at low water; and at five miles lower down are the *Wimble Shoals*.

The WIMBLE SHOALS lie between the latitudes of 35° 30′, and 35° 34′. They extend two leagues out from the shore, but there is a passage between them and the land. The sea always breaks over them in a gale. The Resolution, a 74-gun ship, passed near them in the year 1795, and *Mr. Downie*, the master, made the following remarks: "On standing in-shore to Wimble Shoals, in the forenoon of the 10th of February, 1795, at nine o'clock we saw the land; being then in 20 fathoms: at ten shoalened suddenly to 9 fathoms, and wore ship: we could then perceive from the deck the sea break upon Wimble Shoal; and the land, consisting of a low sandy beach, was seen from the poop: we stood off E.N.E. deepening the water as suddenly as we had before shoalened it; and, in running 22 miles, were out of soundings; therefore reckon the breakers on Wimble Shoal to be 7 miles off when we wore off-shore, and the land as much more from the breakers. The whole extent of soundings from this coast cannot exceed 12 leagues.

FISHING BANK.—To the southward of the Wimble Shoals, there is a large muscle-bank, intermixed with cockles and small pebbles, having 5, 4½, and 4, fathoms of water: its outer edge is about 4 miles from land, and there is a depth of 9 fathoms between it and the shore: it abounds with fish, such as sea-bass, sea-trout, flounders, skate, tusk, and dog-fish. The sea-bass, remarkable for their size, generally weighing from four to six pounds each.

A vessel has filled two barrels on this bank in the space of two hours, with only three lines and three hooks: and there is no doubt, if two hooks had been applied to each line, double the quantity might have been caught. The water upon the bank differs very little in colour from that of the ocean; and, in the depth of winter, is very little colder. Fish are likewise to be caught in the winter-season, by towing over this bank; if you have suitable bait, such as the ballabo, which they generally have in the West-Indies. You must be sure to have good tackling, as the fish are remarkably strong, commonly weighing from twenty to thirty pounds each. Four or five lines have been lost in an hour,

hour, and at last they have been obliged to bend the deep sea-line to the inner end of the tow-line, and by luffing the vessel into the wind, the fish has been taken.

CAPE HATTERAS is a low sandy point. Its lighthouse, which is painted white, was erected in 1799. Since that time the point has so made out into the sea, that the building is now a mile and a half from its outer extremity. The cape is the S.E. extremity of Hatteras Island, which thence extends 23 miles N. by E., and 26 miles S.W. by W. ½ W. The light on the cape is *fixed*, elevated 95 feet above the level of the sea, and may, therefore, be seen, in clear weather, more than 5 leagues off.

The SHOALS of CAPE HATTERAS are of great note, and have been magnified, in representation, far beyond their actual extent. They really occupy a space of eight miles in extent, from the point of the cape in a S.E. direction, and from 3 to 5½ miles in breadth. On the extremities are 5 and 6 fathoms of water.

The most dangerous shoal, called the *Diamond*, lies in latitude 35° 11′, three miles south from the cape, and has only 9 feet of water over it; but between it and the land is a good passage for small vessels in moderate weather, or when the wind is off the land: but it cannot be recommended to a stranger; for he should always prefer rounding the shoals in 10, 12, or 15, fathoms of water. In thus rounding them, in *clear weather*, when the sand-hills and beach about the lighthouse cannot be seen above the horizon, to an eye elevated 14 feet above the surface of the sea, you may be certain of passing the shoals at a sufficient distance. The light on the cape may be seen very plainly in from 10 to 11 fathoms of water, on the outer part of the shoals, when the eye is 10 feet above the level of the sea; but, from a large vessel, it may be seen in from 20 to 25 fathoms.

A LIGHT-VESSEL, of 330 tons, has been stationed to the eastward of these shoals. It shows two lights; one at the height of 60, and the other at 45, feet, and is moored in a depth of 20 fathoms, with soundings of sand, shells, and clay. From the light-vessel, the lighthouse on Cape Hatteras bears N. 50° 37′ W. 11 miles, and the south end of the Shoals S. by W., 4½ miles. Here, with a south wind, a current sets N.N.E. two miles an hour: and, with a north wind, S.S.W. two miles. The light-vessel is so far from the shoals, that vessels can pass, without risk, between them. The estimated distance from the vessel to the edge of the Gulf-Stream is about seven leagues, or about eleven from the lighthouse on shore, but fluctuating as already described.

The schooner *Ella Kintzing*, Frazier, master, fell in with the light-vessel, in the night of the 18th of June, 1824, and the commander reported that, being new and unexpected, he paid particular attention to it: he represents that it has a very strong and splendid light; and he judges, from its having stood a very heavy gale, blowing nearly 24 hours from North to N.E., that it will answer every purpose intended.*

On the survey of the Cape Hatteras Shoals, a few years ago, with the extremity of the cape bearing S.W. by W. 11 miles, there were found 17 fathoms of water, with fine gray sand: with the cape W.S.W. 13 miles, same depth, yellow sand, with black specks: with the cape W. ½ S. 16 miles, 18 fathoms, fine gray sand: with the lighthouse W.N.W. 12 miles, 14 fathoms, bright yellow sand and shells. The lighthouse N.W. by W. leads clear of the shoals on the east. With the lighthouse N.W. by N. 10 miles, there are 15 fathoms off the southern extremity of the shoals, in latitude 35° 7′.

With the lighthouse N. by E. ½ E. 12 miles, the depth is 13 fathoms, and the temperatures of the air and water were found equally 73°. With the lighthouse N.N.E. ½ E. 10 miles, the depth is 12 fathoms, with very fine dark sand.

WEATHER NEAR CAPE HATTERAS.—It was noticed, many years ago, by Captain *Geo. Walker*, that gales from the eastward are more severe in the vicinity of Cape Hatteras than on any other part of the coast, and that they give very little warning; but the first indication is hazy weather, with small rain. When these come on, it is, consequently, proper to get an offing as quickly as possible. Captain Walker adds,—I have several times been obliged, in less than an hour, to be under a balanced mizen.

In the summer season, dangerous thunder-storms are very frequent here, and about the inner border of the Gulf-Stream. "The first indication of these storms is a black heavy cloud, the weather sultry, little wind, and variable. I advise, at the appearance

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* The light-vessel was, however, driven from her moorings, and much damaged, in a gale, 26th of August, 1827. Its appearance, therefore, is uncertain.

of

of these warnings, not to stay to reef, but clue up every sail, except the fore-sail and foretopmast-stay-sail, and your ship will be ready to veer; if you have time to hand the sails clewed up, do it; but it seldom happens that you have, as these gales come on suddenly. A shocking accident happened to a brigantine, in company with me, off Cape Hatteras, in the year 1773: a little before the squall reached them, they attempted to reef, and in the time of reefing, the vessel overset, and all perished."

4.—CAPE HATTERAS *to* CAPE FEAR RIVER.

CAPE LOOKOUT.—At the distance of 22 leagues from Cape Hatteras, the next cape, called *Cape Lookout*, bears from that cape S.W. by W.

Cape Lookout is described, in the *American Coast Pilot*, as in latitude 34° 37′, and longitude 76° 33′; and the cape-woods, where there is a *lighthouse*, as in latitude 34° 39′, longitude 76° 32′. The lighthouse contains a fixed light, 95 feet above the level of the sea. The tower is of wood, painted in horizontal stripes, red and white, alternately. At a distance it has the appearance of a ship of war with her sails clewed up. The light may be seen from the outer end of Cape Lookout Shoals; but vessels passing are recommended rather to trust to the lead than to making the light.

From Cape Lookout the shoals extend, nearly in a S.S.E. direction, to the distance of 3 leagues from the lighthouse. The broken ground extends to latitude 34° 28′: in this parallel are 10 fathoms of water, and thence to the edge of the Gulf-Stream the soundings gradually increase to 95 fathoms. From Cape Hatteras Lighthouse the outer part of Cape Lookout Shoals bear S.W. ¼ W. 22½ leagues; and from the outer part of Cape Hatteras Shoals S.W. by W. at the same distance.

The narrow beachy isles which form the coast between the two capes, form an inlet into Pamtico Sound, named *Ocracock Inlet*; the shoal bar of which (extending two miles seaward) is 9 leagues S.W. by W. ½ W. from the lighthouse on Cape Hatteras, and 13 leagues N.E. ¾ E. from Cape Lookout. On the eastern side of the Inlet is a *lighthouse*, exhibiting a *revolving light*, which bears from the middle of the Bar, in 13 feet of water, W.N.W. a mile and a half.*

The soundings all along, between the shoals extending from the two capes, are regular, gradually diminishing from 14 and 15 fathoms to 5 and 6 fathoms near shore, all sandy ground.

BEAUFORT.—The Bar of Topsail Inlet, the entrance to Beaufort, lies 8 miles W.N.W. from the lighthouse on Cape Lookout. The passage in is between a bank on each side, and is scarcely one quarter of a mile in breadth; it is about one mile and a half long, and trends N.N.E. and N.N.W. On the outer part of the Bar are but 15 feet at low water, but within are 5, 6, and 7, fathoms. In entering, you leave *Fort Hampton*, upon a low sandy point, on the larboard, and thence haul W.N.W. for the anchorage, in 3½ or 4 fathoms, whence the town and mills of Beaufort are seen to the N.N.E. at three quarters of a mile.

From CAPE LOOKOUT to CAPE FEAR the bearing and distance are S.W. by W. 27½ leagues. The greater part of the shore between forms one continued lagoon, in a semi-circular direction, the strips of land in front of which are broken by shallow inlets. Of these inlets the principal are, *Bogue Inlet*, of 9 feet of water, 26½ miles W. by S from Topsail or Beaufort Inlet; *New River Inlet*, of 8 feet of water, 11 miles W.S.W. from Bogue Inlet; *New Topsail Inlet*, 16 miles S.W. ¼ S. from New River Inlet, having 10 feet; and *Deep Inlet*, 3 leagues S.W. by S. from *New Topsail Inlet*.

CAPE FEAR and WILMINGTON.—The low sandy point known by the name of *Cape Fear*, is the S.E. extremity of a marshy island called *Smith's Island*, which forms the two entrances of Cape Fear River and the port of Wilmington. Near *Bald Head*,

* In Pamtico Sound are several lights for the use of the craftsmen, coasters, &c. Of these, a beacon light is at the south entrance of Roanoke Marshes; a light-vessel on the *Nine-feet Shoal* within Ocracock Inlet, N.W. 2¾ miles from Ocracock Lighthouse; another off the *S.W. Straddle*, S.W. of *Royal Shoal*, and nine miles W. by S. from the former; another near *Marsh Point*, at the mouth of Neuse River, leading to New Berne; also a beacon light on Pamtico Point, at the entrance of Pamtico River.

the

the western extremity of this island, is a *lighthouse*, upon the eastern side of the southern inlet; and there is another upon the north side of the *New Inlet*, at three leagues north from the extremity of the cape.

The New Inlet of Cape Fear River is nearly 27 leagues S.W. by W. from the lighthouse on Cape Lookout. On the Bar are about 10 feet at low water. Upon the north side of the inlet, called Federal Point, there is now a lighthouse, painted *white*, and exhibiting a *brilliant fixed light*, at the height of 40 feet. In running for this place, when the lighthouse bears West or W. by S. you will make a thick and high hummock, with trees, called *Merrick's Woody Bluff*. Should the lighthouse be seen, bearing to the northward of west, you will make it and the bluff at the same time.

On approaching the lighthouse, the water will be found to shoalen gradually. In from 4 to 5 fathoms of water, with the lighthouse from W.S.W. to West, there is good anchorage, with soft ground. Of the inlet, the depth of water and channel are variable, so that it is not safe to enter without a pilot.

The shoals, which actually extend from Smith's or Cape Fear Island, reach S.S.E. to the distance of 11 miles, and a swashway, or gat, of half a league, divides the southern extremity from another dangerous bank, called the *Frying Pan*. The latter is nearly 2½ miles in extent; and its southern part, which is very steep-to, is nearly 5 leagues S.S.E. ½ E. from the southern extremity of Cape Fear. In the passage between the Frying Pan and Cape Fear Shoals, the depths are from 5 to 7 fathoms; and to the E. by S. of the Frying Pan are regular soundings for 2½ leagues, 8, 7, 6, and 5, fathoms; fine sand, with black specks and broken shells. It has been recommended to strangers, on passing the shoals in a dark night, not to venture to the northward of 33° 25′. The south side of the Frying Pan lies in 33° 36′ N., and 77° 50′ W.

CAPE FEAR RIVER.—The principal channel into this river lies between Smith's Island on the east, and Oak Island on the west, side; *Bald-Head* is the western bluff of Smith's Island, and on this stands *Cape Fear Lighthouse*, at 4 miles N.W. from the extremity of the cape. On the bar, at high water, the depth is 14½ feet; the vertical rise of the tide is 5 feet.

The lighthouse was established in 1795, and has been painted black, in order to distinguish it from the beacon on Federal Point, and has been improved by the addition of patent reflectors, &c. It stands about a mile from the sea, is 90 feet high, and contains a fixed light. The lamps are 100 feet above the level of the sea, and 50 feet above the tops of the trees, which stand on the hills between the light and the sea. The iron lamp is 10 feet 9 inches in diameter, and about 15 feet 9 inches in height, from the floor to the top of the roof.

The bearings of the lighthouse, and instructions for approaching the bar, have been given by Captain Burch, of the Revenue cutter, as follow: Vessels running down from the westward, should not approach nearer the Middle Ground* than to bring the cape (which is the most eastern part of Bald-Head Woods) to bear E. by N.: when you bring the lighthouse to bear N. ½ E., in about 4 fathoms of water, steer immediately for the lighthouse, which will be a little open to the eastward of a pole-beacon, with a cask on the top, painted black. A continuation of this course will carry you clear of the *Fingers*, when you will see a buoy a-head, or a little on the larboard bow, which you will pass, leaving it on the larboard hand: so soon as you pass the buoy, steer N.W., or keep the breakers close on board the larboard side, when you will luff or bear away, as the water may deepen or become more shoal, to be ascertained by heaving the lead. This will carry you clear of a long sand-shoal, that makes off the point of Bald-Head, which is dangerous to ground upon, as the flood-tide sets directly over, and breaks upon it with the wind from the S.W. In approaching Bald-Head, caution is necessary, as the shoals of both sides are very steep; frequently 6 to 3 fathoms at one cast of the lead. Keep close on this shore, by sounding as above directed, until you reach Oak Island, when you may steer directly for *Smithville*.

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* The Middle Ground on the larboard, and the Fingers on the starboard, side, show themselves plainly by the breakers.

Outside of the bar, in 5 to 8 fathoms of water, the lighthouse bearing North, there is good anchorage, in soft bottom. There is on the bar, at low water, 10 feet; and, at high water, 14½; and the sea is scarcely ever so rough as to prevent a pilot's boarding at the buoy.

Oak Island Channel: This is the small or western channel into Cape Fear River, it being divided from the main channel by the Middle Ground. The direction for coming in this way is, to bring the point of Oak Island to bear N.E. by E. Keeping this course until you get close in with the beach, and thence along the beach until you pass Oak Island. On the bar are 7 feet at low, and 11 feet at high, water. Vessels drawing not more than 9 feet may bring the easternmost part of the clump of trees on the east end of Oak Island to bear N.E. by E. and run for it, which will lead over in the best of the water; so soon as the water deepens over the bar, steer for the end of the sandy point of Oak Island, till close up with it; then steer E.S.E. for opening Cape Creek, till you deepen into 4 fathoms; then haul up North or N.N.W. along the beach until up with Fort Johnson, at Smithville, where you may anchor.

Captain Walker, in his general directions for these coasts says, "When near the latitude of Cape Fear, keep a careful man at the mast-head, as you will descry the breakers on the shoals before you see the land, which we call a good land-fall: and, if you are bound in, come no nearer than in 8 fathoms. I have made the breakers bearing S.W., and I steered S.S.E., which course kept me in the same water until I got to the southward of the shoal; then the water deepened to 10, 12, and 14, fathoms. There is a very great flat all round the south end of this shoal, and about 2 or 2½ leagues from the breakers, having 4, 5, and 6, fathoms of water on it. When you are round and to the southward of it, you may haul up by your lead, to make the land, but come no nearer than in 7 fathoms, as the tide of flood sets to the northward within the shoal.

"The first land you will see is the Bald-Head, which is the highest land, and on the east side of the entrance of Cape Fear Harbour: it appears high and round, with reddish sand below the trees. To anchor on the outside of the bar, bring Bald-Head N.E., and in 8 fathoms of water, and you will have good holding-ground: but, should you bring it any farther to the northward than N.E., you will be in foul ground. If the wind be at N.E., or to the eastward of N N.E., do not come to an anchor, unless you mean to run over the bar, which you cannot do without a pilot, as the sands are so often shifting; nor by any means attempt to get under weigh whilst the tide of flood runs, unless you have a pilot to carry you in over the bar. The flood sets N.W. by N."

The Currents on the Coast between Cape Fear and Cape Hatteras vary with the winds. During the summer, when the prevailing winds are south-westerly, the current sets in the direction of the coast to the eastward; but, when the southerly wind ceases, the current suddenly changes, and this change frequently appears before the change of wind.

When sailing toward these Coasts, it is prudent to keep nearly a degree to the southward of the latitude of the place you intend to make, until you reckon yourself on the edge of the *Gulf Stream*, when you must be directed by judgement, according to circumstances. Do not, if possible to avoid it, sail to the northward of 33° 20′, or, at the highest, 33° 25′, until you attain 10 fathoms of water. In this depth you will be within the south or outer end of the Frying-pan Shoal. In approaching the coast, in 33° 20′, your first soundings will be from 30 to 35 fathoms: in this depth you will be very near to the inner edge of the Gulf-Stream. You will have fine gray sand, with black spots, when you get into 17 fathoms; there is a long flat in this depth of water. In steering west you will, for the first 5 or 6 leagues, shoalen the water very little. When you come into 14 fathoms, you shoalen your water quicker, but gradually. You will see the land from 10 fathoms of water, if the weather be clear, and may then be sure that you are within the Frying-pan, from the outside of this shoal. To the westward of north-west, no land can be seen, when without the shoals.

Rates of Pilotage for Cape Fear Bars, &c.

		Open Boat.	Decked.
Bars: for vessels drawing	6 feet and under 7 feet	5dls.60cts.	8dls.58cts.
	7 8	6 25	9 37
	8 9	7 25	10 87
	9 10	8 37	12 55
	10 11	10 0	15 0
	11 12	12 0	18 0
	12 ..... 12½	13 33	19 99
	12½ 13	14 27	21 40
	13 ..... 13½	15 33	22 99
	13½ 14	16 53	24 89
	14 ..... 14½	17 73	26 59
	14½ 15	21 80	32 70
	15 ..... 15½	23 10	34 66
	15½ 16	25 5	37 57

Open Boat continued.

16 feet and under 16½ feet	26dls.	70cts.
16½ 17	28	60
17 ..... 17½	32	70
17½ 18	39	20
18 ..... 18½	42	0
18½ 19	44	80
19 ..... 19½	48	65
19½ 20	52	50

*** Thirty per cent. upon the established rates to be allowed to decked boats, piloting inward and outward.

For the River, from Fort Johnson to Wilmington

For vessels drawing	6 feet and under 7 feet	7dls.	0cts.
7	8	8	0
8	9	9	0
9	10	10	0
10	10½	11	0
10½	11	12	0
11	11½	13	0
11½	12	15	0
12	12½	16	0
12½	13	18	0
13	13½	20	0
13½	14	22	0
14	14½	24	0
14½	15	25	0

From Fort Johnson to Brunswick, or from Brunswick to Wilmington, or *vice versa*, one-half the pilotage from Fort Johnson to Wilmington.

From Fort Johnson to Five-Fathom Hole, from Five-Fathom Hole to Brunswick, from Brunswick to Campbell's Island, and from Campbell's Island to Wilmington, or *vice versa*, one-fourth of the pilotage from Fort Johnson to Wilmington.

5.—CAPE FEAR RIVER *to* PORT ROYAL *and* SAVANNA.

GEORGE TOWN Entrance, or Winyah Harbour, lies about 19 leagues S.W. ¼ W. from Cape Fear. The coast between these places forms the bay called Long Bay, in front of which, nearly parallel to, and at ten miles from, the shore, is the bank called, from its general depth, the *Five-fathom Bank*. The southern part of this bank expands and forms the base of several extensive shoals, lying off the mouth of the Winyah or George Town River; and here its outer edge, of 5 and 5½ fathoms, is five leagues from the land. Continuing farther South and S.W. the flat is diversified with the shoals of St. Roman, &c.

The north end of the Five-fathom Bank lies W. by S. seven leagues from the extremity of Cape Fear. The bank extends thence S.W. ½ S. Near its inner edge are 10, 9, and 8, fathoms of water, shoaling gradually thence to the shore and to the southward. Near the north end of the bank there is a depth of 10 fathoms, and along its S.E. side are 8, 7, and 6, fathoms.

At the entrance of George Town Harbour, there is a lighthouse, which stands on a sandy beach, at the southern point of North Island. This lighthouse is a lofty circular white tower, exhibiting a fixed or steady light at 60 feet above the level of the sea. The shape of the extensive shoals which form the entrance of George Town Harbour can be understood only by reference to the Charts. The coast between Cape Fear and this place is generally low and sandy.

The opening called *Little River Inlet* divides North and South Carolina. It lies West, about 9 leagues, from Cape Fear Lighthouse. At nearly half-way between is *Lockwood's Folly Inlet*. The land here appears broken, but has no safe harbour.

The

The North Inlet of George Town is 2¼ leagues to the northward of the lighthouse, and forms the northern boundary of North Island, on the south point of which the lighthouse is situated. The bar of this inlet has latterly formed into the shape of a crescent: it cannot be attempted by a stranger, as it varies considerably, according to the prevailing winds, and cannot, under any circumstances, be recommended. On the north end of North Island is a village of about thirty houses, which may be distinctly seen from sea; there are, also, several houses on an island opposite to this point. To small vessels this inlet affords an occasional harbour: there are two passages leading from it up to George Town, but fit for boats only.

The Eastern Bank, off George Town Harbour, which is the outer shoal, lies about one mile and a half to the eastward of the range of shoals lying off the entrance, and six miles from the land. It has only 7 feet on its shoalest part at high water, and 5 fathoms all round. From its north end the lighthouse bears S.W. ¼ W. 11 miles, and from the south end W.N.W. 7 miles. The main entrance of the harbour lies to the southward of this shoal; and vessels drawing 7 or 8 feet of water may enter at half-tide, by bringing the lighthouse N.W. by W., and running for it in that direction.

On approaching the harbour from the northward, the entrance is shut out from view by North Island, and the lighthouse appears to be situated in a low wood. On passing the light, when proceeding either northerly or southerly, a depth of 5 fathoms will be found within 5 miles of the land, between the banks.

Vessels drawing from 7 to 8 feet of water may venture in, without a pilot, at near high water, by the bearing of the lighthouse, and running for it until within 100 fathoms of the land: thence they will have deep water, on both sides, for several miles up the bay. There are several spar-buoys in the entrance, to mark the best water, and, in sailing by these, the following directions are to be observed:—

The first buoy, which is on the Bar, lies in the channel, and may be passed close-to, on either side; from this to the second buoy, also in the channel, the course is about N.W. one mile; having advanced thus far, steer immediately N.E. to the distance of half a league, which will bring you up to the third buoy in the channel, whence you steer N. by W. for the lighthouse, then 4 miles distant, and should keep that course until within 100 fathoms of the light; leaving which on the starboard hand, you will gain a good anchorage.

Vessels drawing 11 feet of water may, with the assistance of a pilot, pass securely through without the aid of spring-tides.

There is a channel into the harbour along the eastern side of North Island. Through this, with the aid of a pilot, a vessel drawing 8 or 9 feet may be conducted. In this inlet, with the wind to the southward and westward, a vessel from sea may find safe and convenient anchorage near the land, at a mile and a half or two miles to the northward of the lighthouse. Common tides rise here about 4 feet; and the time of high water on the bar, upon the full and change, is about 7 o'clock.

Between George Town Entrance and the outer shoal of Cape Roman lie the entrances of *Santee River*. Of these, the southern one, which is the best, is about 2½ leagues S.W. from the entrance of George Town River, and 3 leagues N.E. from Cape Roman.*

The ebb-tide of the numerous rivers which fall into the estuary of George Town, with that of the next great river, called the *Santee*, have formed the extensive flats called the *Shoals of St. Roman*. These flats border the coast in a S.S.E., S.W., and West, direction, not less than 11 leagues, taking the extent of their outer edges; and, off the mouth of the Santee, the extent from shore is not less than 7 miles. Vessels passing should not approach them, in the vicinity of George Town, nearer than into 4 fathoms; nor towards the isle called *Cape Roman* into less than 7 fathoms. The muddy appearance of the water hereabout may frighten strangers, but no real danger is to be apprehended. The land is an extensive assemblage of low islands, and is scarcely discernible from the outer extremity of the bank.

CAPE ROMAN is very improperly so called, it being a very low land, without either tree or bush, and appears, at a distance, like a sand left dry by the tide. To the W.S.W., about two miles from this cape, on the isle called the *Great Racoon Kay*, there

* Near the parallel of 33°, on approaching towards the Shoals of Cape Roman or Bull's Island, the water may be found to shoalen suddenly from 13 to 9 fathoms.

is now a *lighthouse*, which exhibits a strong *red* light, fixed, at 70 feet above the level of the sea. The tower is painted in horizontal stripes, alternately black and white. With the light bearing from N.W. by N. to N.E. by N. there is good anchorage on the flats, in 3 fathoms, to the east of the mouth of the inlet called *Bull's Bay*.

CHARLESTON.—A lighthouse, which marks the entrance of Charleston harbour, bears S.W. ½ W., 31 miles from that of Cape Roman. The land between is alluvial, and forms numerous low islands, the principal of which are named Bull's, Capers, Davies, Long, and Sullivan's Islands. Flats extend from all these isles, along which the soundings are regular. Bull's Island appears very bluff, with red sand-hills, and a spit from the outer end of it extends eastward, about 3½ miles.

A spit, called the *Rattlesnake*, also extends to the distance of three miles E. by S. from Sullivan's Island, which forms the north side of the entrance to Charleston, and you will be on the edge of it in 5½ fathoms.

When Charleston churches are seen to the northward of Sullivan's Island, you will be on the edge of the Rattlesnake; and when the churches are open to the southward of Sullivan's Island, you are clear of that shoal. You should approach no nearer to this bank than in 5 fathoms of water.

CHARLESTON HARBOUR.—The entrance of Charleston Harbour is distinguished by its lighthouse, situate in latitude 32° 41′, on a low sandy point of Morris's Island. The lantern is 85 feet above the sea, and exhibits a *revolving* light, which may be seen 8 or 9 leagues off. When first made, the time of darkness will be twice that of light; on approaching it, the time of darkness will decrease, and that of light increase, until you get within three leagues of it, when the faint light will not wholely disappear; but the difference between the greatest and least light will be as twenty-four to one.

St. Michael's church, at Charleston, is now, also, an excellent mark, it having been painted with pure white, and may be seen, in clear weather, 20 miles off.

There is good anchorage off Charleston Bar, in 6 fathoms, with the lighthouse W. by N. six miles off, and Sullivan's Island N.W. ¼ W. seven miles.

The channel-way into the harbour, is between the North and South Breakers, to the southward of the harbour. The breakers may be seen, and the channel is buoyed. From the outer buoy, which is on the N.E. end of the South Breaker, the lighthouse bears W.N.W. ¼ W. The lighthouse W. by N. leads into mid-channel. Here you will find from 12 to 17 feet of water, according to the tide. In the middle of the channel is a buoy, with a small white flag upon it, lying in 10 feet at low water, and which may be passed on either side. In proceeding, be cautious that the tide may not set you out of your course, as the flood sets across the channel over the North Breaker. When arrived to within half a mile of the lighthouse, you may anchor in 4 or 5 fathoms.

To the southward of the channel above described, there is another ship-channel, called the *South* or *Lawford's Channel*, having from 10 to 12 feet, according to the tide. The course in is N.N.W., and the channel is indicated by a buoy.

The anchorage here is called the *Five-Fathom Hole*; and hence the course is N. by E. 3½ miles, in 6 or 8 fathoms, which will carry you up to *Cummins's Point*: when this point bears West, distant half a mile, change your course to N.N.W. for the western extremity of Sullivan's Island, where you will find from 7 to 10 fathoms. The island may be approached to within a quarter of a mile, as that part of it is bold-to.

The course from Sullivan's Island to Charleston is nearly W. ½ N. distance 4½ miles. With Hog Island bearing North, and Fort Johnson S. by W., you will approach the eastern end of the Middle Ground, to which you should not go nearer than into 3 fathoms. From mid-channel, in this part, a west course will carry you between the Marsh, or Shute's Folly, and the Middle Ground; keeping in 5 and 4 fathoms. The channel is narrow, as a flat extends from Shute's Folly a quarter of a mile off. The west course, last mentioned, will bring you up to the town, where you may anchor in 5 or 6 fathoms.

In working up from Sullivan's Island, stand no nearer to the Middle Ground, or southward, than into 3 fathoms, nor to the northward than into less than 4 or 3½ fathoms.

Should it be required to go up the channel to the *southward of the Middle Ground*, after sailing from Sullivan's Island, as above directed, so soon as Fort Johnson Point bears S.S.W. run for it, and you will pass from 4 to 6 fathoms: on approaching the point,

point, change the course to N.W. by W. in 6 or 7 fathoms, to the distance of a mile, and till you bring the point of Woodland Island N.N.W. as shewn in the Chart of the harbour; thence you may run N.W. another mile, and anchor as above.

N.B. The best time for going into Charleston Harbour is an hour and a half before high water. In sailing, you must keep the breakers on board; but come no nearer to them than 7 or 6 fathoms, for they are steep, and you may have 6 fathoms, and the next minute cast on shore.

The depth of water on Charleston Bar, at low water neap-tides, is 12 feet; at high water neap-tides, 17 feet; at low water spring-tides, 11 feet; at high water spring-tides, 18½ feet. Variation, 1° 30′ East.

CHARLESTON has been described by Captain Hall as a pretty city, with a tropical aspect, between two noble rivers, the *Ashley* and the *Cooper*, on a wide peninsula called the *Neck*. This space of flat ground is covered with the villas of the most wealthy planters. The streets on each side planted with trees, called the 'Pride of India,' *(Melia Azedarach,)* and the houses have verandahs from bottom to top. The greater part are surrounded by gardens, covered with shrubs and flowers, and shadowed by rows of orange-trees. Vessels from all parts of the world here unload their cargoes, and exchange the fruits of tropical and other climes for the produce of the country, as rice, &c. Population in 1830-31, 30,289.

The alluvial isles, *Tybee*, and those to the southward, as *Ossabaw*, *Sapelo*, and *St Simon's*, are the spots on which the finest cotton, technically called the '*Sea Island*,' is raised.

Orders and Regulations for the Port of Charleston.

The harbour-master of the port shall keep an office at some convenient place, to which all persons having business with him may at any time repair, between the rising and setting of the sun; and in some conspicuous part of the said office he shall affix the regulations of the harbour, copies of which he shall cause to be furnished to each captain or commander of a vessel, immediately on his arrival.

No ship or vessel shall be allowed to haul into any dock, or to a wharf, upon any pretence whatever, until her yards are topped, jib and spanker booms rigged in, and sprit-sail yards fore and aft, and such anchors as are not in use, on the forecastle deck, or such other part of the vessel as not to obstruct other vessels passing her sides.

The harbour-master shall have full power and authority, and he is hereby required, to order and direct the anchoring and mooring of all vessels coming into port, as also to fix their proper berths, and, upon application, to order any vessel in ballast, light, or taking in cargoes at any of the wharfs, to slack their fasts, and give an inside berth to a loaded vessel; provided that, at the time of the application, there shall be no other berth vacant, or as suitable at the wharf in question, or at the adjoining wharfs; and that no loaded vessel be allowed more than ten days for the discharge of her cargo. It is further enjoined on the harbour-master to take care that no vessel be permitted to remain at anchor in the river, within the distance of fifty fathoms from the outermost vessel lying at any of the wharfs.

If any captain, commander, or owner of any vessel, shall refuse to anchor, moor, or slack his fasts, as aforesaid, when required so to do by the harbour-master, it shall be the duty of the said harbour-master immediately, and without delay, to procure the necessary aid and assistance to anchor, moor, or slack the fasts of said vessel; and the expense thereby incurred to charge to the captain, commander, or owner thereof; and if the same be not paid within twenty-four hours after their being furnished with the amount, such charge shall be recoverable in the Inferior City Court, at the next term thereafter, with full costs, without the right of imparlance.

The docks and channels of the harbour shall be under the direction of the harbour-master, who is hereby required to prevent any ballast or rubbish being thrown therein, and to keep the same open and free from obstruction; and every person or persons offending in the premises is and are hereby made liable to be fined in the sum of twenty dollars for every such offence, with costs, to be recovered in the Inferior City Court, without the right of imparlance: and the harbour-master, as a compensation for his attendance to prosecute said suits, shall be entitled to receive one half of all the fines so recovered;

the

the other half go to the use of the city; and the said harbour-master is hereby declared a good witness, in all cases, notwithstanding he may be the informer.

If any person or persons shall molest or attempt to obstruct the harbour-master in the execution of the duties of his office; all and every such person or persons shall, upon conviction in the Inferior City Court, be liable to be fined in the sum of twenty dollars, and all costs attending the suit.

The harbour-master shall be amenable for all such losses as shall arise through his neglect; and, upon his omitting to perform the respective duties assigned him by this or any other ordinance, he shall forfeit and pay, for the use of the city, the sum of twenty dollars, for every such offence, upon conviction in the Inferior City Court, with costs; and shall be liable to be dismissed at any time, for any cause or matter which to the council shall appear sufficient.

The harbour-master shall take all lawful means to prevent negroes and other slaves being clandestinely or illegally carried away in any ship or vessel, from this port; and to secure them in the workhouse for the use of the owner, who shall pay a reward of ten dollars to the harbour-master, for every such negro or other slave so secured as aforesaid; and every constable or constables aiding and assisting in the taking and securing such negro, shall be entitled to receive from the owner aforesaid five dollars each; and, in case of refusal on the part of the owner, the parties shall recover the same in the Inferior City Court, with full costs.

To prevent paupers and others, who are likely to become a charge and burthen to the community, from being brought into this city from any of the United States, or from any foreign country, every master of a vessel arriving at the port of Charleston, shall, as soon as he has entered his vessel with the collector of the customs, deliver to the master of the said port of Charleston a perfect list or certificate, under his hand, of the christian and surnames of all passengers, as well servants as others, brought in such ship or vessel; and their circumstances, so far as he knows, noting their places of nativity, or residence; and their occupation or profession, and whether he considers such passenger or passengers as likely to become burthensome to the community; on pain of forfeiting the sum of ten dollars for every passenger whose name he shall omit to enter in such list or certificate; to be recovered in the Inferior City Court, in the same manner as all fines and forfeitures have heretofore been recoverable. And should it so happen that any passenger or passengers so brought in, is or are likely to become a burthen to the city, if such person or persons shall refuse to give security, or cannot procure sufficient security or securities to become bound for his saving the city from such charge; in such case the master of the vessel in which such person or persons came, shall, and he is hereby obliged and required to, send him, her, or them, out of the city again, within the space of three months next after their arrival, or otherwise to give security to indemnify and keep the city free from all charge for the relief and support of such pauper or paupers, unless such person or persons was before an inhabitant of this state, or that some infirmity happened to him or her during the passage; and the harbour-master of the port of Charleston is hereby required to notify to all masters of vessels entering this port the purport of the above clause, free of reward.

The harbour-master shall have authority to appoint one or more deputies, to be approved of by the Intendant, who shall take the same oath of office as himself, and be subject to the same penalties for neglect of duty.

Rates of Pilotage for the Bar and Harbour of Charleston.

For 6 feet of water, or under, 8 dollars; 7 feet, 9; 8 feet, 10; 9 feet, 11; 10 feet, 14; 11 feet, 16; 12 feet, 19; 12½ feet, 20; 13 feet, 21; 13½ feet, 23; 14 feet, 25; 14½ feet, 29; 15 feet, 31; 15½ feet, 35; 16 feet, 42; 16½ feet, 50; 17 feet, 60; dollars.

CHARLESTON BAR to PORT ROYAL.—The whole of the remaining coast of South Carolina, and all of Georgia, is low, and bordered with extensive shoals. From off Charleston Bar, in 5 fathoms of water, to North Eddisto Inlet, the course is S.W. by W. ¾ W., and the distance 5½ leagues. This course will carry you clear of the shoals which lie off Stono Inlet; and which lie farther out than any other that are in your way to Eddisto.

Stono

Stono Inlet is about two leagues from the south channel of Charleston: there are two islands between, viz. Morris's Island, on which Charleston Lighthouse stands, and the island called the *Folly* or *Coffin Land*. With the lighthouse open of the latter, you will clear the Stono Shoals in 6 fathoms of water. But, if you shut the lighthouse in with it, you will not have more than 5½ fathoms off Stono Shoals; you will pass close to the breakers, and consequently be in danger. You may know where the shoal is by the breakers, unless the sea be smooth. There are 9 or 10 feet at low water in Stono Inlet.

From Stono Inlet to North Eddisto Inlet, the course is S.W. by W. ½ W., and the distance 11 miles: the soundings between are regular, and shoalen very gradually as you come from the offing towards shore. The Bar of North Eddisto, and the shoals which are near it, lie off about 4 or 5 miles from the land; there are 3 and 4 fathoms of water close to the bar and shoals, and on the bar 9 or 10 feet at low water.

South Eddisto lies 2½ leagues W.S.W. from North Eddisto. The shore off the islands between may be approached by the lead without danger, as the shoalings are gradual.

ST. HELENA SOUND.—Between South Eddisto Island and the northernmost Hunting Island, lies the entrance of St. Helena Sound, which is about 2 leagues wide. This place is navigable for vessels drawing only 7 or 8 feet of water; is full of sand-banks, many of which are dry at low water. Six navigable rivers empty themselves into the Sound, viz. South Eddisto, Ashepoo, Cambahee, Chehaw, True Blue, and Corsaw. Some of these rivers extend 200 miles up the country; but few of them can be navigated, by vessels of 6 feet draught, for more than 38 or 40 miles from the Sound.

From the entrance of St. Helena Sound, along the Hunting Islands, to the entrance of Port Royal, the course is S.W. ½ S., and the distance about 5½ leagues. Here you will find 5 or 6 fathoms of water, with regular soundings.

PORT ROYAL HARBOUR.—Ships from sea, for Port Royal Harbour, should get into the latitude of 32 deg. 6 min. N., then steer West until within 15 leagues of the land, where you will have from 20 to 25 fathoms of water. Continue your course West till you make the land, which you will do, if the weather be clear, at the distance of 6 leagues, in 12 fathoms of water: hereabout the land is low, with high trees upon it.

The entrance of Port Royal is known by a small grove of trees, which stand on the north side of it; they rise above all the other trees, like a high-crowned hat; hence this grove is called the *Hat of Port Royal*. Continue to steer as before, keeping your lead going, until you get into 8 fathoms of water: you will then be about 3 leagues from St. Michael's Head. You may then steer a point to the southward of the west, until you get into 5 fathoms of water: then more southerly, observing not to bring St. Michael's Head to the northward of N.W. by N., until you see the great north breaker called *Cole's Care*, close to which there are 4 fathoms of water: leave this shoal on the starboard side. In approaching this breaker from the northward, you will see another breaker to the southward, called *Martin's Industry*: between these two breakers is the northern or shoal entrance of the channel into Port Royal Harbour, which is less than a mile wide.

Between Martin's Industry and Gaskin Bank is the channel called the *South Channel*, in which there are not less than 12 feet at low water. To go through this channel, when in 7 fathoms of water, bring Hilton Head to bear N.W. by N., and then steer with an ebb-tide N.W., and with a flood tide N.W. by N., until St. Philip's Point bears N. by W. ½ W.; you may then steer for the point, and proceed up N. by W. ½ W. in 6 and 5 fathoms of water, in which depth you may anchor, in a very safe harbour.

The east end of Joiner's Bank lies about 3½ miles S.E. from Hilton Head, and 4 miles S. by E. from St. Philip's Point; the bank extends thence W.N.W. about 2½ miles, and has 3½ fathoms on it at low water. Hilton Head is on the south side of the harbour, and is the highest bluff point of land thereabout.

TYBEE INLET, the entrance of SAVANNA RIVER, lies 5 leagues S.W. ½ W. from the entrance of Port Royal South Channel. Between is Trench Island; from which the Gaskin Bank extends outward about six miles; at the broadest part you may proceed along, in 5 fathoms of water.

Tybee Lighthouse is on Tybee Island, at the mouth of the River. The lantern shows a *fixed* light, at 85 feet above the sea. There is now a beacon light at half a mile to the

the eastward of it, and the two lights in one, bearing W. ½ N., lead over the Bar in the best water.

It has been recommended by those bound to Port Royal, to make the land about Tybee, as the lighthouse makes that part of the coast more distinguishable than any other. Ships, which draw 14 or 15 feet of water, may go in at Tybee, and proceed through land to *Beaufort,* in Port Royal Island; and thence, in vessels that draw 8 or 9 feet of water, may go through land to Charleston; and from Charleston, in vessels of 7 or 8 feet of water, may go through land to the River Medway, in Georgia.

TIDES.—It is observed on this coast, that N.E., Easterly, and S.E. winds cause higher tides than other winds, and also somewhat alter their course. At Port Royal entrance, the tide flows, on the full and change of the moon, at a quarter-past eight o'clock. About 6 leagues from the land, in 12 fathoms of water, the flood sets strongly to the southward, and the ebb to the northward: at a great distance from the shore there is no tide at all. Near to the entrance of the harbour there is a strong in-draught during the flood-tide, and an out-set with the ebb.

SAVANNA.—Tybee Island is a pleasant island to the southward of the Bar. The lighthouse above-mentioned, is on the N.E. point of this island; it is about 13 miles from Savanna. On the bar there are 20 feet at low water: on the south breaker not more than ~~7 or 8~~ feet, and at a mile and a quarter from the lighthouse the ground is uncovered at low ebbs. On the north breaker there is not less than 12 feet of water, to the distance of a mile.

With 4 fathoms of water you will be over the bar, and should then haul up W.N.W. until the lighthouse bears S.S.W. The best anchoring-ground is with the lighthouse bearing from S.S.W. to South: the former to be preferred, and distant about one cable's length from the beach.

At the entrance of the river is a large buoy, lying on the outer edge of the bar, in the deepest water, with the ~~leading marks on, namely,~~ the beacon and lighthouse in one, bearing W. ¼ N. distant 4½ miles. ~~Another buoy lies in the same direction at a mile within the bar~~; a third buoy lies one mile farther W. by N. from the second; a fourth buoy lies N.W. by W. from the third: after passing all these there is sufficient anchorage for a large fleet, in 4 or 5 fathoms, with the lighthouse bearing S.S.W.

The buoys lie and lead in the deepest water, having a channel half a mile to the northward, and a quarter of a mile to the southward of them, in the narrowest part; on each side, the depth is nearly the same. and there is a depth of 20 feet over the bar, with the lowest ebbs.

Vessels may go in on either side of the buoys; but if, in the night, you should be to the northward of Tybee, observe that the Gaskin Bank should not be approached nearer than in 5 fathoms. In a fresh wind, a pilot is generally taken off the lighthouse; and, in moderate weather, without the bar.

Observations on the WINDS, *&c., on the Coasts of* SOUTH-CAROLINA.

If the wind blows hard from the N.E. quarter, without rain, it commonly continues so for some time, perhaps three or four days; but, if such winds are attended with rain, they generally shift to the East, E.S.E., and S.E. South-east winds blow right in on the coast; but they seldom blow dry, or continue long: in 6, 8, or 10, hours after their commencement, the sky begins to look dirty, which soon produces rain. When it comes to blow and rain very hard, you may be sure the wind will fly round to the north-west quarter, and blow hard for twenty or thirty hours, with a clear sky.

North-west winds are always attended with clear weather; they sometimes blow very hard, but seldom for longer than thirty hours. The most lasting winds are those which blow from the S.S.W. and W.N.W., and from the North to the E.N.E. The weather is most settled when the wind is in any of these quarters.

In summer-time, thunder-gusts are very common on this coast; they always come from the N.W. quarter, and are sometimes so heavy that no canvas can withstand their fury: they come on so suddenly, that the greatest precaution is necessary to guard against the effects of their violence.

6.—SAVANNA *to* ST. AUGUSTIN.

RIVER OGEECHEE or HOGOHECHEE.—Hossaba or Ossabaw Sound forms the entrance of this river, and its bar, which extends a league out to sea, bears S.W. by S. about 5 leagues from Tybee lighthouse, its latitude being 31° 49′. The bar has over it about 18 feet of water. There is an isle up the river, called *Green Island*, which serves as a mark; its land being higher, and its trees taller, than any other in the vicinity. The latter are of pine, and their general verdure give name to the spot. To cross over the bar, bring Green Island to bear N.W. by W.; steer in W. by N. until the water deepens: then haul up N.W. by N., and you will soon gain 8 or 9 fathoms, when your eye, with the lead, will be the best guide.

St. CATHARINE'S SOUND, or the Entrance of the PORT of SUNBURY, which is a port of entry, lies about 30 miles to the south-westward of Tybee Inlet, or the entrance of Savanna River. It has a bar, as shown on the Charts; but the harbour is capacious and safe, and has sufficient water for large ships. The entrance is, however, difficult; for the bar, which is a mile South of the north point of St. Catharine's Island, has only 8½ feet at low tide, while the channel is not more than 200 yards wide, and the shoals on each side are commonly uncovered. Vessels bound to Sunbury, &c. have therefore been directed rather to enter at Hossaba, to the north, or Sapello, to the south, and go by the inland passage, than to attempt St. Catharine's Sound.

DOBOY INLET, leading to Darien.—This inlet lies immediately along the south side of Sapello Island; and its bar, which is 4 miles to the eastward of the nearest land, is computed to lie in the latitude of 31° 20′. The Pelican Shoals, which stretch from Sapello Island, border the channel on the north side.

Wolf Island, on the south side of the inlet, is distinguished by a beacon; and upon the south end of Sapello Island, on the north side of the inlet, there is now a *lighthouse*. To distinguish the latter, in the day-time, from any other lighthouse on the neighbouring coasts, the tower is painted in stripes, horizontally, red and white, which, at a distance, looks something like a ship, with her sails clewed up. The lantern is elevated 74 feet above the level of the sea, and contains a *revolving* light, which revolves once in every five minutes; during which period the greatest power of light and a total darkness will be produced three times, each alternately, at any distance between 10 miles and 8 leagues. Within the distance of 3 leagues, the light will not totally disappear; but the greatest strength of light, to that of the least, will be as forty to one.

On Wolf Island, within the Sound, are also two beacon-lights, which, when in one, lead over the Bar. So soon as you have crossed this, the direction is to haul one point to the northward for half a mile, then steer N.W. by W. for the lighthouse on Sapello, taking care to keep nearest to the Pelican Bank, or the breakers, on the starboard hand. Abreast of the lighthouse there is good anchorage, in 4 fathoms, at half a mile from shore.

There is a buoy on the bar, (No. 1,) in 18 feet at low water, which lies with the outer beacon on Wolf Island W. ½ S. 3¾ miles distant, and Sapello lighthouse nearly W.N.W. 4½ miles. At a mile and a half to the westward of the outer buoy is another buoy, off the inner part of the south breaker; the latter (No. 2,) lies in 21 feet at low water, between the north and south breakers; and it lies with the beacon on Wolf Island bearing W. ¼ S. about 2½ miles, the south point of Sapello N.W. by W. 3½ miles, Doboy Island N.W. by W. ½ W. 5½ miles, and the southern part of the North Breaker Head E.N.E. ½ E. one-third of a mile.*

On coming in with the land, when in 5 or 6 fathoms, clear weather, you will see the beacon on Wolf Island, which must be brought to bear W. ¼ S. Run exactly on this

* In 1819 the Bar of Doboy was surveyed, but the hurricane of 1824 effected a change which improved the bar. The present course for running in, after making the light on Sapello Island, is W. ¼ N. (not W. ¼ S.)

The Catharine, M'Donald, of Liverpool, on the 25th Dec. 1827, crossed the bar at three-quarters flood, and found 18 feet of water and the channel good.

The ship Philadelphia, Sophia Ames, Master, crossed the bar on the 15th Jan. 1828, after the tide had ebbed an hour, and found 19 feet of water.

course

course until the buoy on the outer edge of the bar comes in sight. This buoy may be passed on either side. The same course, W. ½ S., continued, will lead near to the inner buoy, opposite the north breaker. In passing, the north breaker is to be kept on the starboard, and the buoy on the larboard, side; taking care, at the time, that the flood-tide does not set the vessel on the north breaker. On running in, as here directed, the bar will be crossed in not less than 12 feet at low water. From abreast of the inner buoy run exactly N.W. by W. a mile and a half, where there is excellent anchorage, in 4 fathoms at low water. Hence, as convenient, you may proceed 2 miles higher to the lighthouse, where the depths are 3½ and 4 fathoms; or to the mouth of the River Darien, two miles above the lighthouse, where there are the same depths. Neap-tides here rise 7½ feet.*

St. SIMON'S.—In proceeding from Tybee for St. Simon's Bar, bring Tybee lighthouse to bear N.W., in 10 fathoms of water: a course S.W. by S. 24 leagues, leads to St. Simon's Bar. The shore of the several islands between these places is flat, and the soundings towards it are gradual.

St. Simon's Sound is between St. Simon's and Jekyll Islands. The bar is about 3 leagues to the eastward of the shore. On the south end of St. Simon's Island there is now a lighthouse, which exhibits a *fixed* light. The edifice is of stone, 50 feet high, and the lamps are 60 feet above the level of the sea. The latitude of the bar is about 31° 4′ N., and there are 4 and 5 fathoms close to the outside of it; in passing, therefore, it will be prudent not to approach nearer than in 8 or 9 fathoms.

The south end of Simon's Island may be known, not only by the lighthouse, but by four trees, standing thus: †† ††. On Jekyll Island, to the southward, are some remarkable trees, appearing like umbrellas, and thence called the *umbrella-trees*. The beaches, both of St. Simon's and Jekyll Island, are remarkably white.

To sail in, bring the lighthouse on St. Simon's to bear W.N.W. northerly, and steer for it until you get within the bar, or until the southern extremity of Jekyll island bears S.W. by S. On passing upward, give the point of the lighthouse a berth of about a cable's length, and anchor with the fort bearing E. by S. in 13 fathoms of water. You will then be about three-quarters of a mile from it.†

The tides, on the full and change of the moon, are as follow: In the sound, nine o'clock; on the bar, half-past seven; and in the offing three-quarters after six o'clock. The flood, along shore, sets S.S.W., the ebb E.N.E.

St. MARY'S SOUND.—The entrance of St. Mary's Sound and River lies about 8 leagues S.S.W. from St. Simon's Bar: between there is a depth of 5 and 6 fathoms.

The south end of Cumberland Island forms the north side of the entrance to St. Mary's River. Upon this shore stands a *lighthouse*, which exhibits a *revolving* light. On the opposite side of the entrance, upon *Amelia Island*, are two beacons, useful for crossing

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* Captain Hall visited Darien in March 1828, and here saw the bright star *Canopus*, or α Navis, of the southern hemisphere.

M. Humboldt's remarks on the pleasure arising from the first sight of the stars of another hemisphere are well known. (*Atl. Mem.* 6th Edit. p. 158.) On the same topic, Captain Hall says, "Amongst the many pleasures which compensate the fatigues and trouble of voyaging in distant seas, this sort of companionship with the heavenly bodies has always appeared to me the greatest. The first sight of the North-Star, on re-crossing the Equator, after beating about in the opposite hemisphere, is like returning to the conversation of some old and unchanged friend. On the other hand, in steering to the south, the nightly rise, higher and higher, of new constellations, known before only by name;—the Southern Cross;—the Centaur;—the Phœnix;—irresistibly elevate the thoughts; and, by expanding the field of observation and reflection, cannot fail, in some degree, to influence the mind even of the least imaginative."—III. 215.

† On all the coast to the southward of Savanna, and probably even more to the northward, the shoal grounds generally seem to increase, from an addition of alluvial soil. By reference to the old charts, it seems evident that the bars and entrances of harbours are more shallow than formerly; and, as the channels have been thus impeded, all caution is required; for a single storm may, in some cases, produce a dangerous change. Some years ago, (we think in 1821,) the schooner Cornelia, from Charleston, "bound to St. Augustin, was stranded on an island of sand off Little St. Simon's. No lives were lost, though but little of the cargo was saved. The captain burnt the hull to the water's edge, for the purpose of saving the iron-work. The island is about 14 feet above high water-mark, is yearly increasing in size, and never covered, except in heavy gales." This is the newspaper account; and, as usual, defective as to the situation of the island, &c.

what

what is termed the *Old Channel*, and which, when in a line, bear W. ¼ N. thus ranging with a buoy which lies inside the bar, and this is the direction for entering. There is 6½ feet of water on the bar at low ebbs, and the rise of tide is 6 feet. High water, on the full and change, about VIII h.

Having crossed the bar, with the beacons in one, steer for the north point of Amelia Island, giving the shore a good berth. Between the points of Amelia and Cumberland there is good anchorage, near the latter.

The bar, as above described, lies 2¾ miles northward from the *Main Bar*, whereon there are 12½ feet at low water, and a buoy on the north side of the North Breaker Head. The course over this bar is W.N.W., leaving the buoy on the starboard hand: but strangers should bring the buoy to bear N.W. by W., when they may run with safety, allowing for tide and requisite depth. After passing the buoy, steer N. by W. ½ W. for 2¾ miles, which will lead to the upper buoy above-mentioned, whence you proceed as already described.

The following directions for sailing into St. Mary's River were written by Mr. Joseph Seaward, in 1808.—Vessels sailing in, over St. Mary's Bar, must sail southward until they shut the north end of Amelia Island on with the south end of Cumberland Island, and should keep close, in about 5 fathoms of water, along the breakers. Here you will see several trees on Amelia Island, much like umbrellas: bring the southernmost tree on with three sand-hills, which you will see on the beach, and then you will have the bar open. On the bar, at low water, the depth is 12 feet. The tide rises, on the bar, 6 and 6¼ feet. Be cautious of the tides, should the wind be light or scant, on going over the bar. The flood sets strong to the north on the north breakers, and the ebb strong to the south on the south breakers.

There are two buoys; one laid outside the bar, and the other inside. Steering from one to the other will lead over it.

Vessels from the northward, after passing Jekyll Island, which lies in latitude 31° 3′, should keep in 7, 6, or 5, fathoms of water, according to the weather and size of the ship. On proceeding towards the southern part of Cumberland Island, *Dungeness House* will be seen. This house is the only conspicuous large building on the coast, and is hidden by the trees until you have advanced to the southward. It stands about a mile and three-quarters from the south point of the island. Southward of the house there is a space of about two miles without trees, and this part, therefore, appears like a distinct island.

In running southwardly for the bar, keep outward, in 6 or 7 fathoms, until the light-house bears N.W. ¼ W., then steer for it; when on the bar there will be 12 feet at low water; within the bar, at the buoy, 3 fathoms. Leaving the buoy on the starboard side, steer N.W. by N. 3 miles, which leads on the tail of the Middle Ground, lying on the larboard side. With the south point of Cumberland N.E. half a mile, there is good anchorage.

The tide rises here 6 feet at common, and 7 feet at spring, tides; and flows on the bar at 8 h. 20 m. on full and change.

Without the bar you may, if requisite, anchor in 7 or 8 fathoms, with the south part of Cumberland Island bearing W. by N. ½ N. or W. by N., but it is completely exposed to winds from seaward.

St. JOHN'S RIVER, &c.—The bar of St. Augustin lies nearly S. by E. about 17 leagues from that of St. Mary. Between lie the rivers of Nassau and St. John. The bar or entrance of Nassau lies nearly 5 leagues to the southward or S. by E. of St. Mary's, and between there will be found a depth of 5 or 6 fathoms, with sandy ground.

The coast of Amelia Island is a low even coast, but has a range of sand-hills, which serve as a natural dyke against the sea. From each end, the bars of the rivers stretch outward, as described, to a considerable distance.

To sail into Nassau River, or out of it, you should sound the channel before you venture on the bar, as all the banks are quicksands, and apt to change in strong gales from seaward, or freshets out of the river. The tide rises here about 4 feet, and runs strongly, especially the ebb.

The sands at the entrance of Nassau River lie 3 miles off from the south-east point of Amelia Island, and to the same distance from the north-east point of Talbot Island.

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The ENTRANCE of ST. JOHN'S RIVER lies 10 miles to the southward of that of Nassau. In making this place, when bound southward, it appears like a high round bluff, on which there is a wooden building, like a windmill, called the *Vigia* or *Lookout*. The north side of the entrance is formed by Talbot Island, which is five miles in length, low, and covered with trees. It is high water here, on the full and change, until three-quarters past nine o'clock.*

The bar of this river is apt to shift; so that directions for entering might endanger the vessel whose master should attempt to follow them. The best mode is, to sound the bar, unless a pilot should come off. From this entrance to about 70 miles up, you may sail in any vessel which the bar will admit.

ST. AUGUSTIN.—Between the River of St. John and St. Augustin, a distance of 25 miles S.S.E. ½ E., the shore is so bold, as to have 5 and 6 fathoms within half a mile of it. When abreast of Cartel Point, which is the north point of the bay of St. Augustin, you will come in sight of the island of St. Anastatia. On the north end of this island there is a *lighthouse*, in latitude 29° 53′, longitude 81° 25′, which exhibits a *fixed* light. The light-tower is of shell-stone, square, and painted white. It is 70 feet in height, exclusive of the lantern, which is 7 feet, and contains six patent lamps. Here is also a signal-post, from which, when a vessel appears in sight, a signal is made to the town of St. Augustin, by hoisting colours, and firing a gun. If the vessel appears to the northward of the bay, and carries three masts, they hoist an ensign, and hang on a pole, in the form of a triangle, three balls on the north side of the tower: if to the south, the balls are hung out on the south side of the tower; if a two-masted vessel, two balls and a jack are hoisted; if a sloop, one ball and a pendant: for a fleet, they fire five guns, and hoist an ensign.

The beach between St. John and St. Augustin, is even and straight, except about a hill, 4 leagues S.S.E. from St. John's, which is a little higher than the rest of the sand-hills. This place, where there are three springs of fine fresh water, is called the Horse-Guards, from General Oglethorpe's posting here a detachment of horse, during his expedition in 1738, against St. Augustin. It is the first place from Long Bay, in South Carolina, where the inland navigation is interrupted; one may, however, by going up St. Pablo's Creek, from St. John's, arrive within 4 miles of St. Mark's, or North River; and a small boat may, with little difficulty, be hauled over from one to the other.

This beach of St. John is tolerably bold, the soundings being regular, and the bottom generally a fine white sand; but, when you approach the south end, be sure of giving it a good berth, as St. Augustin's Bar stretches a long way out.

The time of high water here, at full and change, is half-past seven, *a. m.*, or, in other words, an E.S.E. or W.N.W. moon makes high water.

HARBOUR OF ST. AUGUSTIN.—The bar of St. Augustin is formed by the extremity of a narrow shifting sand, which extends two miles E.S.E. from Cartel Point, and the point of another sand, which extends half a mile from E. by N. from the N.E. point of St. Anastatia Island. This bar is little more than a quarter of a mile wide, with a small shoal lying in the middle, and which divides it into two channels, called the North and South Bars; there is not more than 9 feet on either of them at high water, spring-tides, and at low water only 5 feet. The bar is now distinguished by three buoys.

Vessels bound to this place from the northward should not bring the lighthouse farther to the westward than S.W. by W. If the wind be to the south, bring the lighthouse to bear West; if moderate, come to an anchor, in from 7 to 9 fathoms, muddy ground. All vessels, when off the bar, are required to show, by signal, how much water they draw, by hauling down the flag and hoisting it again so many times as the vessel draws feet of water.

PILOTAGE.—The pilots of St. Augustin board vessels outside whenever the weather admits; if otherwise, they direct them in by a signal, which is waved in the direction the vessel ought to steer. The rate of pilotage is two dollars per foot of the draught.

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* A vote was passed, in 1828, for a lighthouse and two buoys to facilitate the navigation of this river, but we had not seen the specification when this sheet was committed to the press.

There

There is a swash to the northward of the bar, which has, at times, 11 and 12 feet of water; but it shifts so frequently that it is seldom attempted. High water, full and change, at 9h. 45 m. *Variation* of the compass, 4½° East.

Vessels bound from Europe to St. Augustin, would shorten their passage considerably by making the south end of Abaco, or the Hole in the Rock, (in latitude 25° 50′, longitude, from Greenwich, 77° 7′,) then running W. by S. to make the Berry Islands, and thence W. by N. or W.N.W., till they get into the Gulf Stream. The only precaution to be observed is, to steer to the westward of North, after you are clear of the Grand Bahama Island, because the bank stretches N. by W. nearly, and the currents set partly on the N.W. part of the bank, particularly towards the Memory Rock. Observe also, it is necessary to give the west end of the Grand Bahama a good berth, not merely from its shoals, but lest, with the wind hanging south-westward, you should be embayed.

Having gained the Gulf-Stream, with the wind blowing strongly from the eastward, by keeping the Bahama shore on board, smooth water will be obtained. If it blows from off the opposite coast, by keeping over towards it, the same convenience will be experienced; not, however, approaching too near. In a gale from the northward, the most prudent way is to retreat before it, in a southerly direction, taking particular care not to approach too near the Florida shore.

Observations *on the* Weather, *&c. in the* Bay *of* St. Augustin. *(By Captain George Walker.)*

"From the 1st of November to the last of February, the hardest gales prevail that blow on this coast; and in general from the N.N.E. to the S.S.E. the wind any way easterly comes on very suddenly to a gale during the season above-mentioned; and these gales give but very little warning. In the year 1777, I had the charge of his Majesty's ship the Lively, and was then at anchor in St. Augustin Bay, when it came on to blow at E.N.E., and in fifteen minutes time I was obliged to slip, and had we not carried sail to the utmost, we should not have cleared the land to the southward.

"When the wind backs against the sun, with a small rain, you will perceive the sea to rise before the wind comes; then prepare for a gale, which in general will last fifty or sixty hours. If you should be obliged to cut or slip, carry all the sail you possibly can, to get an offing before it increases, so as to put you past carrying any sail, which is always the case; and observe that, the flood-tide setting to the southward will be of no service to you farther out than in 12 fathoms of water, when you will be in the southern current until you get into 46 fathoms, which is about 15 leagues from land. Then you will be in the stream, issuing out of the Strait of Florida, and which runs strongly along the edge of soundings as far to the northward as the latitude 35° 15′. Then it sets more easterly, or about N.E. by N. as far as the latitude 37°; from thence as far as the capes of Delaware or Philadelphia, in latitude 38° 50′ N., its direction is about E.N.E., and from thence, in the latitude of 38° 50′ N. it sets away nearly East."

Directions *for making a speedy Passage from* St. Augustin *to* New York; *and Observations on the* Tide *along the* American Coast.

From the Bay of St. Augustin, steering N.E. to the distance of 63 leagues will bring you into the middle of the Gulf Stream, in latitude 32°, where the temperature of the water will mostly be found to vary between 80 and 84 degrees. The same course may be continued, with the benefit of the Stream, 90 leagues farther, or to the parallel of 35°, longitude 74½°, off Cape Hatteras; and hence the direct course will be N. by E. 80 leagues, when you gain soundings in latitude 39°, or near the parallel of Cape May. You now proceed on a north course, about 23 leagues, upon soundings, and look out for the high land and lighthouses of Nevisink, in latitude 40° 24′, and very remarkable, being the highest land on either side of the entrance of the harbour of New York. When you have nearly made the distance before-mentioned, be careful not to run in the night or thick weather, and come no nearer than 12 or 14 fathoms. To come-to in the Bay of New York, bring the Hook lighthouse W. by N. or W.N.W., in 10 fathoms, and the southernmost part of the high land of Nevisink S.W. by S.

TIDES.—Note that, all along the southern coast of America, you will find no tide farther out from the shore than in 10 or 12 fathoms of water; from that depth unto the edge of soundings, you will have a current variable or setting to the southward, at the rate of about one mile per hour; when out of soundings, you will have the Gulf Stream setting to the N.E. quarter; and the farther you get to the northward, setting more easterly, but not so strong.

7.—ST. AUGUSTIN TO CAPE FLORIDA AND THE MARTYRS.

MATANZA INLET.—Nearly 5 leagues S.S.E. from the bar of St. Augustin, and at the south end of the Island of St. Anastatia, lies *Matanza Inlet*, having a bar of only 8 feet at high-water. From St. Augustin to this place there is a channel, for 5 feet draught, within St. Anastatia Island; this is the usual communication between the two places; so that few vessels enter the Inlet of Matanza from sea.

The bar is known from seaward by the fort, which, appearing white, may be seen, in a clear day, nearly 3 leagues off. The tide flows at each end of the island, on full and change days, at half-past 7 o'clock.

CAPE CANAVERAL lies S.S.E. ¾ E. 31 leagues from Matanza Inlet; between lies *Moskito Inlet*, which is about 14 leagues N.W. by N. from Cape Canaveral. The shore is bold all the way from Matanza Inlet to the Cape, excepting a rocky shoal, which extends one mile and a half from shore, at about 5 miles to the southward of Matanza Inlet.

The extensive rocky shoals about Cape Canaveral extend from the cape about 3 leagues to the eastward, and are nearly 5 leagues in breadth from north to south. There are 5 fathoms of water near to these shoals on the north side; on the south side, 4 fathoms; and, on the east side, 9, 10, and 12, fathoms.

Between Matanza and Moskito Inlets the beach continues nearly of the same appearance as to the northward; the coast middling bold-to, the soundings regular, and the bottom sand, with now and then some shells, and sometimes green mud.

From Moskito Inlet to Cape Canaveral you meet with an even smooth beach, except Mount Tucker, which lies 5 leagues S.S.E. of the entrance of Moskito River. You will find regular soundings as above, until you come to the cape, which lies within the dangerous shoals above described. The outer pitch of this headland lies in latitude 28° ~~16½'~~, 28½' and in longitude, from Greenwich, 30° ~~27'~~. 33' The shoals about it were never laid down in any chart which preceded Romans', with the least degree of truth, and this ignorance must have occasioned the loss of many vessels, the circumstances of whose misfortunes were never heard of. Observe that the wind, on blowing a long and violent gale from E.N.E. to S.E., makes Canaveral Shoal almost unavoidable to a ship sailing in this latitude, and not having a large offing, and that, from the outermost breakers, the land is scarcely visible.

From Cape Canaveral the shore stretches nearly south, for 6 leagues, to opposite the 10 mouth of St. Sebastian's River; then S.S.E. 7 leagues, to the knolls, or hummocks, called the *Tortolas*, off which are some heads of rocks under water; 8½ leagues farther, 7 of which continue in a S.E. by S. course, the other 1½ about S. by E. ½ E., you find the extreme of Indian River, called Hillsborough Inlet. From the shoal of Canaveral to within 2 leagues north of this river, the coast is flat and treacherous; it is remarkable from the immense number of palm-trees; whence it acquired the name of *Palmar de Ays*, or Palm Grove of Ays. *Indian River* is a lagoon that is north of the inlet, and communicates with the land to the southward: in this lagoon and sound many streams of fine fresh water empty themselves. The inlet has a very shifting bar, sometimes not admitting a boat; and at other times, 6, 8, or even 10, feet of water have been found on it; therefore, if you have business here, you must send a boat to visit the bar, before you run in; when within, it is a safe harbour; but a vessel must be moored; the tide, which ebbs and flows 5 feet, running with violence. The people of the country come to this place for the purpose of fishing, and the quantity of fish and oysters found here is amazing. Off this bar the sand has a peculiar quality of rubbing cables to pieces in the bent, insomuch that one can never lay 24 hours at an anchor, without wholely or nearly losing an anchor, even in fine weather: nay, you will often, in less time, find one

or

or two strands quite chafed off: what this is owing to is not known, the sand being a very fine quick-sand, and the ground not foul, except close in, where there are some stones, and the remains of a wreck.

From Hillsborough Inlet, the coast stretches S.S.E. ¼ E. about 9½ leagues, making an island, at whose south end is another inlet, called by the Spaniards *Hope*, and by the English *Grenville, Inlet:* this will admit vessels of only 5 feet draught: to the north of it, on the point of its entrance, lies a remarkable spot of rocks on the beach, as there is also at 1½ league to the northward of the entrance: 3 leagues farther north are several high blue or black rocks, standing on the beach, which makes this part of the coast remarkable; as does likewise a hill inland, full of white spots, a little to the north of the rocks: this hill is called *Monte Pelado* or *Bald-head Mount*, and more frequently the *Bleach Yard*. A small reef, just under water, about half a mile from the shore, abreast of the high rocks, forms here a convenient little harbour for boats. There are two wells of excellent water, in a little meadow, at the back of the sand-hills, nearly a mile to the south of the high rocks: the *River St. Lucia* likewise shews its mouth over the sound, when you stand on the northernmost high rock; the wells have casks in them, and this is a very good watering-place for vessels, which, having had a tedious passage through the Gulf, are in want of a supply of this indispensable article. This island, between the two inlets, affords plenty of turtle, venison, and bear; likewise considerable quantities of wild ducks, each in their season; besides coco-plums and palm-cabbage: and, on the main opposite, turkeys are found in abundance. The coast is even, bold-to, and the soundings are regular.

You have now reached the southern extremity of the great bank of regular soundings, which lies before the eastern coast of Florida; and here the Gulf Stream comes very near the beach: the colour of the water changes from a muddy green to a beautiful Saxon blue.

From Grenville Inlet the coast trenches nearly S. by E. ½ E. for about 3½ leagues, to a high ledge of rocks, out of which a large stream of fresh water rushes into the sea: a little to the north thereof is a small reef, with about 2 fathoms of water on it, where vast quantities of groopers, snappers, member-fish, porgies, margate-fish, rock-fish, yellow-tails, and Jew-fish, &c., may be taken. From this reef you see a high mount of sand and rocks, a little to the north of you: 3 miles to the northward of which is good fresh water, at the back of a high sand-hill; there is some, also, a little more than half a mile to the southward of the said rocky mount, which is called *Cooper's Hill*. It is remarkable land, where cabbage-trees, coco-plums, and sea-grapes, are found in abundance, as well as venison and other meat; so that, in fair weather, a vessel may refresh here agreeably.

The coast from hence runs very nearly south, and the beach is bold-to, till you come within 2 leagues of *Middle River:* it does not vary above half a point either way, from this general south course all the way to Kay *Biscaino;* and, as it is necessary for vessels bound to the southward to keep this beach close on board, its particular description will prove a sure guide in every part of this difficult navigation.

Five leagues to the south of the above point, or ledge of rocks, out of which issues a large spring of fresh water, there is another ledge of rocks. This last ledge is a mile and a half in length; and, somewhat more than 2 miles south of these, is another point of rocks, which are very low; 1½ mile farther is a high cabbage-grove; 3½ miles more to the south, is a point of high rocks, near three-quarters of a mile long; and 2¾ miles farther, another high point of rocks, about 1¼ mile in length. Half a mile to the southward of these is *Rio Seco*, or *Dry Inlet*, whose mouth is seldom open, and has a narrow bar of dry sand before it: the coast forms here a small kind of cove, which makes a good road for small craft. Five miles to the south of Dry Inlet is another point of rocks; and south of them is a small bight; half a mile farther, lies the mouth of *Rio Nuevo* or *New Inlet*, which is about a quarter of a mile wide, and generally open, but very shallow: here Jew-fish are very abundant, both within and without the river. Two miles and a quarter south of this inlet are, or were, five tall cabbage-trees on the pine-land: 4½ miles farther is a thick scrubby point, and the sand-hills in general are high, and covered with thick bushes; here the shore is no longer so bold as before; but a bank of soundings, about five leagues broad, begins to cover the beach. Five miles south of this, is the north end of a marshy point, extending three-quarters of a mile to the mouth of *Middle River*, which is a quarter of a mile across, but shallow; and, like New Inlet, very full of Jew-fish.

From

From Middle River the beach has nothing observable, except that its hills are higher than those farther north, being covered with shrubs and trees; and 10 miles south of Middle River, is a remarkably clump of palm-trees. You may see water over the land; and the coast is so flat, that there is not above 12 feet of water within a mile or more of the shore, the bottom solid rock. About 8 miles south of the palm-trees, is the opening called *Boca Ratones*, or *White Inlet*, which will admit small craft, but has a reef stretching a great way to the sea.

South of Boca Ratones is a narrow island, ten miles long, the eastern part of which has the name of *Cape Florida*, on account of its being at the beginning of the Florida Reef. South of this island is a channel of a mile in width, having 6 feet of water at the best of times: the opposite land, on the south of the channel, is the north point of *Kay Biscayno*. Directly east, 5 miles from that kay, lie the *Fowey Rocks*, which are the first dry spot on the reef, and the true beginning of the Martyrs; Kay Biscayno has likewise a bank lying off it; but, by good management, in giving the Kay a berth of about half a league, you are sure to keep in a good channel; and till you come abreast of the first southern Kays, about 5 miles from Kay Biscayno, you will have no less than 16 feet of water. Let it be observed, that, besides watering-places on or near Kay Biscayno, the beach will almost in every part yield good drinkable water, in digging, provided the sand does not cover clay; for wherever clay appears on the beach, the labour would be useless.

DIRECTIONS *for* SAILING *from* ST. AUGUSTIN *to* CAPE FLORIDA *and the* MARTYRS.

So soon as you are clear of the bar of St. Augustin, steer S.E. ½ E.; at the distance of about 6 leagues, on this course, you will be right abreast of, and 3 leagues from, Matanza Inlet, in from 7 to 10 fathoms. In the latter depth is fine dark gray sand. In continuing thence S.S.E. ¾ E. you will go along shore at an offing of about 4½ leagues, and in your way will meet with soundings from 10 to 15 fathoms, as expressed in the Charts, chiefly of various kind of sand, but sometimes of a very soft greenish mud, which the lead will sink into over the strap.

The above offing you may with safety keep in with vessels of any draught, for 23 leagues to the south-eastward of Matanza. You will begin to get shells among your soundings at 19 leagues, chiefly white and black, sometimes mixt with black and gray sand, but mostly the shells by themselves, very seldom the sand alone: if you chance to fine sand only, it will be of a coarse gray kind. At 23 leagues, as above, you will begin to get red shells, which is a true sign that you approach the shoals of Cape Canaveral, there being no red shells far to the north of it: now you may begin to haul off, though you might continue safely until in 7 fathoms, or, in the day-time, even in 3, that being the depth half a mile without the outer breaker. In hauling off, you will find from 10 to 12 fathoms, sand and shells; and, if you come near to the N.E. end of the shoal, you will often find live cockles, on a black sandy bottom, in 10 or 11 fathoms. Your offing will be made good on a course S.E. by E. ½ E. from the first cast on red shells, till you judge yourself about 9 leagues off; then, if you choose to make Hillsborough Inlet, in latitude 27° 15′, run South; but if you are bound directly to the Reef, steer S. ½ E., and it will bring you in with Grenville Inlet, in 26° 48′, where the soundings are become narrow.

In running to the southward from the outermost part of the shore, observe, when you begin to get very coarse black sand and black shells; for soon after you will find your bottom changed to white sand, and your water to deepen: when you find 16 fathoms on white sand, you begin to run clear of it, and in 20 or 21 fathoms you are quite clear; then, in pursuing a south course, your water again shoalens; and, in a run of about 3 leagues, you once more find red shells, mixed with black and red sand, continuing a great way; you still shoalen your water, and when you come in about 11 fathoms you will have shells alone without sand. All this while you see no land, it making a bay to the south of Cape Canaveral, till you come into about 9 fathoms, when you can just perceive the Tortolas, already described. If you have to call at Hillsborough Inlet, which lies 8 leagues from the 9 fathoms, it is now time to haul in a little for the land; from

the Tortolas southward you will again find sand, sometimes without shells; if you intend to anchor off the inlet, take care to run no nearer in than from 4½ to 5 fathoms, and choose a spot of shelly bottom, as being safer for your cable than the sand.

Observe that, between *Cape Canaveral and Hillsborough Inlet*, the coast is flat, and not to be trusted so much as the shore north of the cape. Observe, also, that the red shells extend no farther south than Hillsborough Inlet, and but a little way north of the Cape Shoal; whereby you have an infallible mark in coming well in upon soundings, either from the northward or southward, and to know that you are in with or near to the Cape Shoal, if even you should chance to have been without any observation for several days.

In going from Hillsborough Inlet to the southward, the coast is pretty bold, and your course is S.S.E. ½ E. towards Grenville's: at near 7 leagues from the inlet you meet with some high rocks, on the edge of the beach, which are an excellent mark for knowing this place: and four leagues and a half farther is *Grenville Inlet*, or the southern entrance of *St. Lucia Sound*. When you begin to see the above rocks, you will also perceive a change in the colour of your water; the soundings are here no more than about 5 leagues broad, and vessels have been at an anchor in 12 or 13 fathoms of water, off shore, when, upon trying the current with the log, it was found to set to the N.E., at the rate of three miles and a half per hour, the water being almost blue in that depth; therefore it is best to keep the shore on board, at least exceed not 2 leagues from it; your soundings will be various, on sand, green oaze, and shells, as marked in the Chart; avoid the little reef off Cooper's Hill, a little north of the large Spring in the Rock, which spring is in lat. 26° 42′. Now it is necessary to keep close along the shore within a distance from half a mile to one mile, and you will find deep water close in, the bottom in many places coral and gravel, sometimes rocks; and notwithstanding the foulness of the ground, it is highly necessary to come to an anchor, if it should fall calm, or else you will lose as much ground in the three hours calm, as may cost you three days to recover.

At about two leagues and a half south of Middle River, is a pretty broad ledge of firm rocks joining the beach under water, which continue as far as White Inlet: abreast of this ledge you will meet with many spots of coral, sponges, rocks, and grass, which, through the clearness of the water, look frightful to strangers, but are not dangerous: upon the Bank here is fish in great plenty.

WHITE INLET.—In the year 1822, *M. Guillemin*, French Consul at New Orleans, in consideration of the dangers incurred by shipwreck on the coast of Florida, announced an establishment near Cape Florida, with provision of suitable succours, &c. He adds, that those who may, in any danger, be passing by the north of Cayo Biscayno, will find the Boca Ratones, or entrance of White Inlet, which may be passed safely, when houses on the continent a-head will be seen. In case of shipwreck to the north of Boca Ratones, people may find, at the distance of two miles, certain spots, whence houses may be seen; and where, by making signals with fires or otherwise, due aid will be afforded. If wrecked on the south of New Inlet, they must proceed in a southerly direction, along the shore, and they will find, at the distance of every four miles, posts, with inscriptions in English, French, and Spanish, pointing out the spots where pits of fresh water have been dug.

CAYO BISCAYNO.—Commissioner Ellicott, in his valuable journal, (Philadelphia, 1803,) has noticed that Biscayno Kay, being situate at the northern part of the reef, and capable of commanding all the coasting trade of this passage, would be one of the most eligible positions on all this coast for a lighthouse. In consequence of this suggestion, a lighthouse has been erected on the south end of the isle, in latitude 25° 41′, longitude 80° 8′, and was first lighted on the 10th of March, 1826. The light is fixed, and about 70 feet above the level of the sea. It is described as nearly 7 miles distant from the outer edge of the Fowey Rocks or Great Reef. Vessels drawing 10 feet may enter from the N.E., between the Reef and Cape Florida, to the distance of 2½ miles above the light, and find shelter, in the mouth of the Hawke Channel, within the Reef. Near to Cape Florida is a reef, denoted by a white spar-buoy.

The DESCRIPTION *of the* MARTYRS *and* FLORIDA REEF, *taken in order from the* SOUTH-WEST, *constitutes the latter part of the next section.*

SECTION

SECTION V.

The COASTS *and* HARBOURS *of the* MEXICAN SEA, *or* GULF *of* MEXICO.

The MEXICAN SEA, commonly called the GULF OF MEXICO, bounded on the east and north by the coasts of Florida, Missisipi, &c., and on the west and south by the Mexican States, is 294 leagues in extent from east to west; and, in the narrowest part, between the Missisipi and the coast of Yucatan, 154 leagues from north to south. The passage by which it is generally entered is the CHANNEL of YUCATAN, westward of Cuba; and that by which it is quitted is the STRAIT or CHANNEL of FLORIDA; each passage being controlled by the prevalent winds and currents.

Descriptions of the Winds, &c., which govern the navigation, will be found hereafter.

It is now generally understood that the Mexican Sea is the great receptacle of waters from the Colombian or Caribbean Sea, and the origin of the Florida or Gulf-Stream. The indraught into it to the N.W., over the Campeché Bank, has been fully described in our *Memoir on the Atlantic.* This indraught fluctuates in strength, according to the season, but it is, at times, much stronger than is commonly imagined; and even near Cape Antonio, where there is commonly a re-flux to the S.E. or E.S.E., a strong north-westerly current has frequently been found.*

As the greater number of vessels which enter this sea, when bound to its ports of trade, enter from the S.E., we shall commence our description of its coasts with the southern shores. This Section is, therefore, subdivided into six parts; in the first of which is given the description of the coast from *Cape Catoche*, the N.E. point of Yucatan, to *Point Xicalango*, on the west of the *Laguna de Terminos*, and which, therefore, includes *Campeche*, with its Bank, &c.; the Second includes the coast from *Point Xicalango* to *Vera Cruz*, and directions for sailing directly to the latter; the Third comprises the western coast, from *Vera Cruz* to the *Bay of St. Bernardo*; the Fourth, the north coast, from the *Bay of St. Bernardo* to the *River Missisipi*, with directions for sailing to and from that river; the Fifth describes the coast and harbours on the north and east, from the *Missisipi* to the *South Point of Florida*; and, latterly, the Sixth contains remarks on, and directions for, the GULF generally.

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* "If the very ingenious thought of Governor Hastings is founded,—that the rotatory motion of the earth produces a retiring of the waters westward, no space seems better calculated, from its form, than the Gulf of Mexico and the avenues to it, to produce a *chuck up* of the water at the head of it. The Red Sea is said to be very much higher than the Mediterranean; more than the difference that evaporation could produce in the latter. This may be owing to the like cause.

"One can conceive only three causes of a current;—*Accumulation* by river water, as in the Euxine; *Evaporation*, as in the Mediterranean; and by the wind's forcing the water into a space that detains it until a head is formed. Doubtless the latter is the most common cause of currents. I think I have made it clear that there is a continuous current from the Indian Sea, by the Cape and St. Helena, Cape St. Roque, &c., and into the Gulf of Mexico; and this is joined, near the Line, by the stream produced by the N.E. Trade, which gives the combined waters a westerly course toward South America, where they are joined by the southerly stream produced by the S.E. Trade, by the mean of the coast of South-America. All this is proved, to my conviction, by the time-keeper journals of Captain Cook, Captain Bligh, Mr. Dalrymple, &c. &c., together with my own proper observations and remarks. Here a stream, first generated by wind in the Indian Sea, along the eastern coast of Africa, is renewed by the S.E. Trade, when nearly spent, and successively fed and strengthened by other Trade currents, in its way to the Gulf of Mexico.

"What a pity that Government does not send persons to traverse the whole Atlantic Ocean, at least, and give Navigators some confidence in this matter. It is now left to the industry or zeal of individuals."

Letter of Major Rennell to the Editor of this work, 28th of June, 1809. At this period we expressed a wish to see, in *one* publication, all that the Major had written on Currents, and he soon after began those curious and valuable Charts which have lately appeared.

1.—CAPE CATOCHE TO POINT XICALANGO.

YUCATAN.—The peninsula of YUCATAN, the easternmost of the Mexican States, has long been celebrated for its logwood, mahogany, and other valuable trees. Its chief town is *Merida*, on the N.W., latitude 20° 55′, longitude 89° 43′, but the chief place of trade is *Campeché* or *Campechy*, on the Western coast.

The eastern coast is altogether low and woody; the N.E. broken into several low isles, of which those called *Cancun*, *Mugeres*, and *Contoy*, are the chief. These will be described hereafter.

Cape Falso is a piece of flat-land, south of Cancun; it is bluff, and higher than the other land in the vicinity; making, from the eastward, like an island.

The State of Yucatan, of which *Cape Catoche* is the N.E. point, has generally been described as a very fine country. The climate is temperately warm in the summer, which begins in the month of April, and ends in September. The winter season is indifferently cool, excepting in January and February, when the weather is almost as hot as in summer: yet, on the whole, the country is very wholesome, especially in an elevated tract, which extends across it, wherein the natives live to a great age.

The sea-breezes, which are regular, attemper the heat. The soil is indifferently good; produces plenty of corn, where properly cultivated, and abounds with cattle of all sorts, but the principal commodity is logwood, as already noticed. At Campeché, &c. large quantities of salt are manufactured. The town of Campeché, being built of stone, and open to the sea, makes a fine appearance. The houses are not high, but the walls very strong; the roofs flattish, after the Spanish manner. It has a good dock, and is defended by a fort or citadel.

ISLES OFF THE N.E. COAST OF YUCATAN.

The three isles off the N.E. coast, above noticed, are Cancun, Mugeres, and Contoy; the last, which is the northernmost one, lies about 7 miles from the main coast; its shore is clear, and you may pass at 2 miles from it, in 6 fathoms.

The last edition of the Spanish Directory describes the N.E. coast and Isles of Yucatan as follow:

The land or corner of Yucatan, called CAPE CATOCHE, sends out various islets at a short distance from it, named *Cancun*, *Mugeres*, *Blanquilla*, and *Contoy*: the last, which is the northernmost, and separated from the coast, is 13 miles from Cape Catoche: its north end lying true East and West with the Cape: it stretches from N. by W. ½ W. [*N.* 9° *W.*] to S. by E. ½ E. [*S.* 9° *E.*] 5 miles. A bank stretches out two miles from its north end, in the same direction, with from 3 to 4, and 5 fathoms, depth of water, on rock. From its south part a spit also projects towards the north end of *Mugeres Island*, leaving a passage, with 3 fathoms of water, to the anchorage of the last-named island. CONTOY has an anchorage for frigates, nearly on the parallel of its northern point, at the distance of a mile and a half, in 4, 4½, and 5, fathoms, on sand; the depths decrease towards the south, to a mile and a half, where 2½ fathoms are found, near the edge of the bank; the latter continues from the north point of the Contoy, and afterwards turns to the west, towards Cape Catoche. Those bound to this anchorage should keep in mind that the waters ordinarily run to the N.W., and that at W. ¼ S. [*N.* 86° *W.*] 5 miles from the north end of Contoy, there is a shoal, with 2 fathoms of water. The tides here are irregular, and fall 18 inches in the season of the *breezes*, or trade-winds. This anchorage is safe; but at other times you ought to be aware of on-shore winds. At the south end, water, in holes, may be found.

BLANQUILLA ISLAND does not properly deserve the name, as it is united to the coast by a small tongue of sand, and, therefore, it is properly a *peninsula*.

CANCUN is nearly united to the shore, forming two mouths; the southern named *Nisuco*, and the northern, which has an inlet in the middle, *Cancun*: we know nothing of any anchorages here, though some Charts represent anchorage at the southern part of Cancun.

The following Remarks on these isles were made by Captain CAWLEY, when commander of H. M. schooner *Grecian*, in May, 1823; and they are the more important, because

because the anchorages now described were very imperfectly, if at all, known to the commanders trading hereabout. It will be seen that they afford good shelter to vessels during a north-easterly gale.

The ISLA MUGERES, by some called MOHAIR KAY, is a small rocky island, about seven miles in length, and from a quarter of a mile to a mile and a quarter in breadth; it lies nearly North and South, about five miles from the main land of Yucatan, with which it forms a secure anchorage, and shelter from the prevailing, or indeed from any, winds, in from 3 to 5 and 6 fathoms.

A reef and rocky shoal extends from the north end, in a north-westerly direction, about six miles, where it joins the reef of *Contoy*, or *Loggerhead Kay*, at about eight miles from the latter Kay.

The eastern side of Mugeres Kay, which is entirely open to the sea, has a deceitful flat shelf of rocks, just under water, on the beach, rendering it impossible for a boat to land in safety; but, on the west side, is a fine lagoon, with 2½ fathoms at the entrance, and 3½ within.*

A reef extends from the south end of the island, in a westerly direction, to the distance of two miles; and another reef, or rocky shoal, in the same direction, lies at about half-way between the kay and the main land. On the south end, which is the highest and most rocky part of the island, stands a small stone castle and look-out house; these were probably built by the Buccaneers about the time that Admiral Vernon took Porto-Bello. On the walls are carved the names of many piratical vessels, with the dates, one as late as 1820, and one "*Corsair La Vengeur*, 1743." A small piratical hut, evidently not a month old, was burnt by the boats of the Grecian, in February, 1824. Two dozen bayonets were found here, and it appeared as if the pirates had repaired hither to divide their plunder and separate.

Casks have been sunk in various places around the beach, within the lagoon, to catch the rain: the water, thus caught, is pure and sweet; owing probably to the distance it has to run over the fine sand, before it falls into the casks; the beach was strewed with the remains of plunder and wreck. The island is extremely barren and rocky; its hills are covered with a sort of stunted palm, and short bushy furze, which would make pretty good brooms; there are, however, other trees on the island, particularly on the south end, which would answer for fire-wood. It bears S.S.E. ½ E., 13 or 14 miles from Contoy, and is distinctly visible. The latitude of the anchorage off the N.W. side of the latter Kay is 21° 32′ N.

CAPE CATOCHE (latitude 21° 34′, long. 86° 57½′) has two islets within a mile to the N.W. of it, and these form, with JOLVAS ISLAND, two mouths, called *Joujon* and *Neuva*, fit for canoes only. From the cape to the west the coast bends a little to the south, 18 miles, to the western extremity of Jolvas Island, which forms the *Bocas of Conil*. This coast is foul; for a rocky bank, with little water, extends outward two miles from it.† The island Jolvas and the coast form a lake, obstructed by various islets and grassy spots, and fit for small canoes only. It is called the *Lagoon of Mursinic* or *Lagartos*.

From the Bocas de Conil, the coast continues to the W. by N. about 50 miles, to the *Rio Lagartos (Lizard River)*, whence it inclines W.S.W. ¼ W., [*W. by S.*] thirty-five leagues, to *Punta Piedras*, or Rocky Point. All the coast from Cape Catoche is very low and flat, without any remarkable objects upon it, excepting a *Cairn*, or little mount of stones, intentionally raised by the passing Indians on the very beach of Lagartos, which may be known by its resemblance to a hat: to this follows the little wooded hills of *Angostura*, *Yalcopo*, and *Puerto de Mar*, which are between the vigia of the River *Lagartos* and the cairn or *Monte Cayo*, which is 14 miles to the east from the west end of Jolvas.

In August, 1826, *Mr. Dunsterville* landed on the peninsula of the Rio Lagartos, in

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* By the particular plan, given on the Chart of the Bay of Honduras, it appears that the Lagoon is 2½ miles in length by about one mile in breadth. Its western side is formed by a range of islets, to the north of which is the entrance, at 5 miles from the S.W. end of the Kay. The best water, 2½ fathoms, is at a quarter of a mile from the north-eastern shore of the lagoon.

† From Colorados, or Red Point, which is 23 miles from the Bocas of Conil, a bank stretches to the N.W. with 2, 3, and 4 fathoms of water, on a rocky bottom, and on which, in 1780, the frigate *Santa Marta* was lost, at the distance of about 840 fathoms from the coast.

longitude

longitude 88° 6′ 0″. Sounded in 2½ and 2¼ fathoms within a mile of the beach; sandy bottom, and 3 fathoms at about 2 miles out. The land is low, and abounds with game of all descriptions, deer included. A few inhabitants live on the coast, who subsist, principally, by fishing. In 8 fathoms, at the bottom, fine rock cod, 10lb. in weight.

The Baxo del Corsario or *Privateer Bank*, extends outward N.N.W. from the western part of Jolvas, and has 10 fathoms near its outer edge, with breakers on it when there is a heavy sea. The shallowest part of this Bank is situated, according to the survey of Don Ciriaco Cevallos, in latitude 21° 37′ 30″, and longitude 87° 16′, from Greenwich, giving it an extent of three miles from East to West, and about half a mile from North to South; its west end being on the meridian of the west end of Jolvas Island, 4½ miles distant. The shoal has been examined by the pilot *Josef Gonzales Ruiz*, who gives the following description:

"The Corsario Shoal is a rocky shelf, which begins to the eastward of Mosquitos Point, with a turn of about three leagues to the north and to the westward of that point; it extends about N.W. by N. to that, or rather a less distance, and ends in 7 or 8 fathoms of water. All this bank is of rocky spots, which shoalen towards the land, until, at about 3½ miles from Mosquitos Point, there is a shoal extending about *two* miles East and West, and less than half a mile in breadth. This shoal, at low water, has 11, 12, and 13, palms of water; and, at high water, 13, 14, and 15, palms.* Some of the rocks rise higher than others. The shoal is of *Mucara Rock*, with black spots, and some red ones, which seem to be sponges. Those spots farthest to the east bear from the west part of the island, two leagues N.N.E. from Mosquitos Point."

Next to the Vigia, or Lookout, of the River Lagartos, is that of *Silan*, where water may be procured with facility. To the Look-out of Silan follows that of *Santa Clara*, to which succeeds that of Telchaac, where, also, water may be procured: next comes that of *Ygil*, then that of Chuburna; and to this, finally, the castle of *Sisal*. None of these Look-outs *(Vigias)*, nor the cairn of Lagartos, nor Castle of Sisal, can be seen farther off the shore than from 6 fathoms of water. From the Cuyo, or *Cairn*, at Lagartos, to Chuburna, you may anchor, without fear, in from 4 fathoms outward; but not nearer land, as there are many stones, shoals, and banks of rocks, which cannot be easily ascertained by the lead, because they are covered with a coat of sand, and thus they cut the cables, whereby anchors are lost; in addition to which, the depth often suddenly diminishes upon them, and therefore vessels are in much danger of getting a-ground, and of being lost.

The *Vigias* (Lookouts) are no more than towers of wood, in which guards or watchmen are placed to discover vessels. The *Castle of Sisal* is built upon the very sea-shore; and in its vicinity there are three or four houses, covered with thatch, which serve for warehouses to articles of merchandise brought hither in coasting vessels, to be taken to Merida and other inland places of this province; and, also, for the articles of export from them. At this place (Sisal) there is abundance of water, and it may be obtained with facility.

Upon Point Piedras there is a little mount, named *No-te-perderas*, (Do not lose yourself,) which serves for a good mark to know it by, and which is seen from Sisal Shoal, or at 14 miles off.† From this point the coast rounds about to the S.W. for 30 miles, to *Point Desconocida*, which forms the N.W. front of the Peninsula of Yucatan: this coast, as well as the former, may be seen well from 6 fathoms of water, and is commonly named the *Palmares*; for, among the wood with which it is cövered, many *Palmitos* (Cabbage Palms) are seen, though there are none on the other parts of this coast. On the coast of Palmares no one ought to anchor; for the bottom is of stones, covered with a thin coat of sand, which deceives the lead.

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* A Palm is equal to 8½ English inches.

† Monte No-te-perderas is the most remarkable land on the peninsula of Yucatan. It is a little mount, of an oval shape, lying five miles to the westward of a castle called that of *Sisal;* and, at a little to the westward of it are several similar risings in the land, which sufficiently denote this part of the coast, are a guide to ships passing this shore; as by keeping them in sight from the deck your safety will be assured from a shoal which lies at four leagues to the northward, as shown hereafter.

The Mexican seamen have a couplet applicable to the mount, the translation of which is,

"Sailors, mark me well,
I your safety tell."

Point

Point Desconocida is the S.W. point of the *Inlet of Salinas*, which extends seven leagues in to the N.E., forming a lake, the greatest breadth of which is four miles.

From Point Desconocida, the coast trends ~~to the~~ south, ~~but rather inclining to~~ the ~~east (true)~~ 22 miles, to *Las Bocas*, (The Mouths,) which are two little inlets formed by the coast; in front and very near to them are two very ~~little~~ islets. From the *Bocas*, the coast continues to the south, with some inclination to the west (true), to the distance of 15 miles, or to *Jaina*, which is another inlet of the coast, at the mouth of a river; in front of this there is another islet; there is also an islet, named *Piedras*, or Rocky *Islet*, half-way between the Bocas and Jaina.

From Jaina the coast continues with some inclination towards the west, (true,) to the distance of 21 miles, towards the river of *St. Francisco*, which is 4½ miles to the N.E. of CAMPECHE', the only point of commerce on all this coast.

The coast between Point Desconocida and the River of S. Francis cannot be seen farther off than from 3 or 4 fathoms depth, and then it appears to the view with various breaks, which look like very low kays; all of it is remarkably shallow and clean, so that, with the lead in hand, there is not the least danger on the whole of it, excepting that which arises from the hull of a sunken vessel, which lies to the west of the Isle Piedras, and in 3½ fathoms of water, to which vessels navigating in this depth ought to give a berth.

From the River of St. Francisco, the coast continues to the S.W. for 12 miles, to *Point Morros*, on which the Castle of St. Josef is the first thing descried; afterwards the city of *Campeché;* to it follows the castle of St. Miguel, next comes the town of Lerma; after it succeeds a point of the coast extending out to the sea, and which is named Point Martin; the next to it is Point Morros: all this front of coast, which forms the anchorage of Campeché, may be seen plainly from 5 fathoms; but the water is so shallow that you will find 4 fathoms at 15 miles from the land, and 2½ fathoms at 4 miles from it. This anchorage, therefore, needs no pilot, nor any particular advice for taking it; for, once arrived at the depth convenient for the vessel's draught of water, you may let go your anchor, remaining as if in the middle of the ocean: hence results an immense labour in discharging and loading cargoes; for even those vessels which can approach nearest to the land, remain 4½ miles distant from it. In order to diminish this labour, and to manage so that boats, lighters, or launches, may go to and return from the shore under sail, they anchor to the west of the tower. In this anchorage, although open entirely to the North and N.W. winds, which in the season blow with great force, there is not any thing to fear, for they do not raise any sea of consequence, and vessels remain at anchor with sufficient safety.

To the west of Point Morros, and rather more to the south, it is not so shallow; and, *according to information*, 4 fathoms may be found there, at a league from the shore. Any one who approaches this coast, with the object of wooding and watering, ought to endeavour to take this last anchorage, in the vicinity of which, and something to the south, is the town of Champoton, where they may provide themselves with the articles required.

From Morros Point the coast trends S. by W. ½ W. [*S.* 25° *W.*] 36 miles, to the north point of *Javinal*, when it begins to round to S.W. ½ W. [*S.* 60° *W.*] 61 miles, to *Xicalango Point*, which is the western extremity of *Terminos Lagoon*. This lagoon is a gulf, 36 miles long, and about 25 deep: between the two points which form its entrance, or mouth, are two islands that shut it in; the western, called *Isla del Carmen*, is the largest. At the western extremity of Carmen is a garrison, named that of San Felipe (St. Philip). Between this and Point Xicalango is the principal entrance to the lagoon, with rather more than 2 fathoms of depth, and of it, we are informed that it is very difficult to enter, and that it is absolutely necessary to have a pilot.

We have been favoured with the following Remarks on the mouth of the Laguna and neighbouring coast, by CAPT. GIBB, of the *Lydia*, of Liverpool, 1830:—

"On advancing from the northward and approaching the Laguna, the land will be found to be low. A vessel drawing 12 or 14 feet, should not come nearer to it than in 3 fathoms, unless the weather be fine. So soon as you open the mouth of the harbour, either heave-to or come to an anchor in that depth. Here you will quickly be boarded with a pilot, who first appears in a canoe, having a small flag (generally white) on a mast or pole.

"Should

"Should you be under canvas, and see the canoe endeavouring to near you, with the flag elevated, you may steer directly for it; but should she haul down her flag, after being seen, it will be a signal that you are running into danger.

"The Tides here are neither regular as to change nor height. The north winds make the highest water in the harbour; and with them the current outside runs strongly to the north-eastward.

"Do not approach the Niche Bank, off Champoton, nearer than in 6 fathoms. Off the coast between Campeché and Laguna, if you do not approach nearer than 3 fathoms, you will elsewhere be clear of all danger.

"In the season of the Norths, should you not succeed in obtaining a pilot, on no account attempt to send a boat on shore, without clear day-light. If the weather looks at all suspicious, send down top-gallant yards, and keep your ship ready to haul to the westward. If at anchor, keep a slip-rope on your cable, and so soon as the North commences slip and start. When your head is to the westward you will then be stemming a strong current coming from the bottom of the Gulf.

"The best anchorage, in order to wait for a pilot, or to fill up after one has come out, is with Laguna Point S.S.E. in 4 fathoms of water. No vessel should attempt to cross this bar if drawing more than 12½ feet of water; for even with that draught you may be sure to stick for some time."

WINDS ON THE COAST OF YUCATAN AND MEXICAN SEA IN GENERAL.

On the northern and western coasts of Yucatan, between Cape Catoche and Point Desconocida, and thence to Campeché, there is no other than the N.E. or general wind, interrupted by hard norths in the winter months; and, about the end of April, tornadoes commence from N.E. to S.E. These tornadoes generally form in the afternoon, continue about an hour, and, by nightfall, the serenity of the atmosphere is established. The season of the tornadoes continues until September; and in all the time there are sea-breezes upon the coast, which blow from N.N.W. to N.E. It has been remarked that, as the sea-breeze is the more fresh, the more fierce is the tornado, especially from June to September. The sea-breezes come on at about eleven of the day; and at night the wind gets round to E.S.E. or S.E., so that it may be, in some degree, considered as a land-breeze. *See farther, as to the Winds of the Mexican Sea, our Memoir, &c. on the Atlantic Ocean, 6th Edition, page 74.*

The MEXICAN SEA is notorious from its thunder-squalls, tornadoes, water-spouts, and long calms;—all concomitants of a hot and moist air. These phænomena are ascribed to the trade-wind, which, constantly rushing into the gulf from the Atlantic, and being there confined, in some degree, by the surrounding lands, causes opposite currents of air, particularly near the shores. Hence, in the southern part of the gulf, the prevailing winds are in summer from S.E. and East, and in winter from N.E., with heavy storms from N.W.; the winds, as in all other cases, blowing towards the region most heated by the presence of the sun. From the same reason, the prevailing winds in the gulf, west of the peninsula of Florida, are from the N.W. and West, the heated atmosphere of the sandy shore of the peninsula drawing the current of air towards it. The promontory of Florida is also noted for the tornadoes experienced near it from May to August, and which blow from the S.W. or S.S.W. The N.W. winds, from the lofty mountains of New Mexico, bring with them an extraordinary degree of cold, which causes the thermometer at the Havanna to fall, at times, in the winter, to the freezing point. The *Norths*, or northern winds, commence in October, and are frequent until March, over the eastern coast of Florida and the adjacent sea.*

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* *Some of the remarks on the Currents*, given in our Memoir on the Atlantic, were deduced from the particular observations of Don Thomas Ugarte, in 1794, and Don D. Galiano, in 1799. One of these officers found, at a degree and a half to the southward of the channel of Yucatan, or that between Cape Antonio and Cape Catoche, the current setting N. 47° E. (nearly N.E.) at the rate of half a mile an hour. The other found it, at 11 leagues more to the northward, setting in a *mean*, N. 30° W. one mile and four-tenths an hour. About Cape Antonio, in an extent of 30 leagues, nearly North and South, the mean was found to be S. 63° W. one mile. On the other side, at 15 leagues to the N.W. of Cape Catoche, it was found to be N. 59° W. 0·36 of a mile. At about the same distance to the N.W. of the N.W. Point of Yucatan, it was found to be S. 23° W. 0·46 of a mile. Thence to Vera Cruz *no current* was found.—*See Note on the Route of the* BANN, *hereafter.*

THE

The Soundings or Bank of Campeche'.

The CAMPECHE' BANK is a great shoal, which extends from the north coast of Yucatan almost as far as lat. 24°, and from the coast of Campeché, to the west, as far as the meridian of 92° 30'; the depth as well as the quality of the soundings on it are so uncertain, that it is not possible to ascertain your situation on it by the lead: it will be sufficient to take a glance at the Chart to convince yourself of this fact; nevertheless, the soundings from 20 fathoms towards the shore are so regular, that you may navigate along it with all safety; for, having once caught that depth, which you will find at 10 or 12 leagues from the coast, the depths will be found to run uniformly with the coast until you are to the N.W. of Point Piedras, when it suddenly diminishes 2 fathoms. The same regularity is remarked all along these soundings, from 20 fathoms to 4 fathoms; and you will always find the diminution to the N.W. of Point Piedras, which is, undoubtedly, caused by some spit of rocks that extends out from the point; for upon it the soundings are always on stones. From 4 fathoms to the shore, in all the tract of coast between the Cayo or cairn of Lagartos and the Lookout tower of Chuburna, we have already said that there are various stones and shoals, most perilous to navigation.

The quality of soundings, from 20 fathoms towards the shore, does not preserve regularity; for sometimes it is gray sand with gravel, at others gravel alone, and at others sand with shells and coral; thus it alternates until to the N.W. of Point Piedras, where, as we have already said, the soundings are on stone or rock, which make a very good mark to know a vessel's situation by, and to enable her to shape a course with security, so as to pass between the Triangles and New Shoal, *(Triangulo y Baxo Nuevo,)* which is the channel that ought to be preferred for running off the bank on its western side: but it is still better to ascertain the vessel's place by the course which is necessary to preserve the depth of 20 fathoms; for, if you retain that, steering W.S.W. ¼ W. [*W. by S.*], it is a proof that you are between the meridians comprehended between the Cairn of Lagartos and Point Piedras; but, if you augment the depth on this course, and it is necessary to change it to S.W. by W. ¼ W. [*W.S.W.*] and S.W. ¼ S. [*S.W.*], it is a proof that you have passed the meridian of Point Piedras, and that you are abreast of the N.W. front of the coast, or between Point Piedras and Point Desconocida; and, finally, if, in order to retain the same depth, you are obliged to steer South, you need not doubt that you have passed, or are at least abreast of, or on the parallel of, Point Desconocida. What we have said of 20 fathoms depth applies also to any lesser depth on this coast; but on the rest of the soundings, or bank, that is, from 20 to 22 fathoms, into deeper water, there is no regularity whatever, either in the depth of water or quality of soundings, especially on the north part of it; and this necessarily follows, for it is sown with shoals most dangerous to navigation, of which we shall speak in order.

BAXO DE SISAL *(Sisal Shoal)* is a large tract of rock, on which there is a spot of about 2 cables in extent, in all directions, which has not more than 13 feet of water on it: this point is the danger to navigation; and to keep clear from it, take care not to get into less than 12 fathoms if you go to the north of the shoal, or into more than 7 fathoms if you go to the south of it, or between it and the land; for its edges on this side are in 8 fathoms, and on the outside in 11 fathoms. Soundings on rock are also a secure indication of the proximity of this shoal; but the best mark for it by day is the bearing of the Mount No-te-perderas, which lies nearly South [*S. 7° E.*] from the shoal, and from the shoal itself this mount can be seen in clear weather: the situation of this shoal is well ascertained.

The Sisal Shoal was sought for and found by *Don Ciriaco Cevallos*, on running from the anchorage at Sisal. He says the least water on it is 2 fathoms, according to the *traditionary* information of the people of the country; but he could find no less than 18 feet, surrounded, very near, on all sides, by 6, 8, and 10 fathoms. Between it and the contiguous land of the continent is a channel of 12 miles, fit for the largest vessels. "It is true, when we found 18 feet, we were ignorant of the state of the tide, which, at that time, rose from 3 to 4 feet at high water. From the shoal, Mount No-te-perderas bears true S. 7° E. 14 miles; and this mount is the best mark for keeping clear of it, whether passing to the northward or southward."

This shoal was again examined by Mr. C. Brown, master of H.B.M. ship *Bann*, in 1819, who reported it to be seven-eighths of a mile long, nearly S.E. and N.W. and a quarter of a mile broad. Several rocky patches were found, with 2½ and 2 fathoms on them;

them; and one, the shallowest, with 10 feet. The latter is nearly one mile from the S.E. end. Within a cable's length, all round, were 5, 6, and 7, fathoms.

It has been reported that there is another shoal, at about 4 miles North from the castle of *Sisal*, but of which no authentic information can be found.

In sailing or plying to windward, between Sisal Shoal and the land, which is by far the safest way, stand towards the shore to 4½ or 4 fathoms, and off to 7 fathoms. By keeping the land in sight from the deck, it will always lead clear to the southward; for at the shoal the land can be partially seen from the deck in very clear weather only.

On the great bank hereabout are many spots of coral rocks, which it is necessary to guard against, by bringing up with a chain cable; but, with the exception of the reefs and these spots, the bank is composed of coarse white sand and shells. Towards the edge, the sand, in 7½ fathoms, is much finer.

From the observations in the Bann, Sisal Shoal appears to lie in lat. 21° 21′, long. by chron. 90° 7′ 55″; by lunars, 90° 10′ 30″. Sisal castle in 21° 10′ 30″ N., and 90° 2′ 15″ W. *Variation*, by ampl. 7° 20′. E.

THE ALACRAN is a shoal of great extent; in its south part there is a little safe and well-sheltered harbour, in which vessels drawing 11 feet may anchor. This harbour is frequented only by the Campeché coasters, who make oil from the immense quantity of fish which they find here. All others ought to shun the proximities of the shoal; no one should ever sail hereabout, from the east to the west, in 28 fathoms depth or upwards; but should always pass in from 20 to 22 fathoms. The situation of this shoal has been well ascertained by the survey of Don Ciriaco de Cevallos.

The bank extends 14 miles from North to South, and 11 from East to West. The islets upon its southern part are named *Perez*, *Chica*, and *Pajaros*, and it has various banks and reefs, rising more or less above the surface of the water. The harbour is formed by the reefs, which extend around Perez and Pajaros.* At its entrance the depth is from 2¾ to 7 fathoms; and, further in, from 2¾ to 7¾ fathoms. The best anchorage is to the eastward of the middle of Perez Isle, in 6¾ fathoms, on sand and shells, having to the south the rocky bank which extends from the S.W. end of that isle towards the East and E.S.E. about six cables' length.

THE ARCAS are three islets, which may be seen at the distance of 5 miles; they are the southernmost upon the western edge of these soundings, and lie almost nearly W. by N. 27 leagues from Campeché. They form of themselves a good harbour, which may be entered at any side as is most convenient, and without any other care than to avoid the spits stretching from them. The N.W. entrance may be taken by hauling round the south part of the N.E. island, (which is also the largest,) and passing the east part of the S.E. island; this will carry you clear of a spit which runs out to the N.W. of the greater island, and which is the object that shelters the anchorage from the northerly swell. To enter by the S.W. you ought to give a berth to a reef which stretches out about 1½ cable's length to the south of the westernmost island. The west shore of the larger island also sends out a reef about a cable's length from it; and, as this lies within the shelter of the anchorage, the sea does not break upon it; and, therefore, you may very easily run upon it; but you will avoid this by not approaching the west coast of that island nearer than 2 cables' length. This anchorage is very superior in northerly gales to that of Campeché; and, as there is depth in it for all classes of vessels, he who, under such circumstances, can catch it, will find himself well sheltered and secure.

The Arcas have been surveyed, and a plan of them published at Madrid. The new directions state that, in entering by the *N.W. passage*, you should bring the south end of the northernmost isle, which is also the largest, on with the middle of the S.E. isle: this mark will lead clear of the spit which extends to the north and west from the larger islet, and which is that affording shelter to the anchorage from the northerly swell. The *S.E. Arca* is surrounded by reefs, separated from it by a space of about a cable's length n breadth. This islet, with the reefs at the S.E. part of the larger one, form a channel of two short cables' length, with from 5 to 16 fathoms, on sand, stone, and gravel; by which, in case of necessity, and according to the situation a vessel is in, an entrance to the anchorage may be attempted.

* See the particular Plan on our Chart of the Mexican Sea, upon which all the shoals here enumerated are distinctly marked.

The

The CABEZO, a head of rock, which lies 13½ miles to the S.W. by S. of the Arcas, having only one fathom over it, must be cautiously avoided.

BAXO DEL OBISPO.—A shoal of small extent, named the BAXO DEL OBISPO, or *Bishop's Shoal*, lies *N.* 40° *W. true*, 7 leagues from the Arcas. It is a flat rock or stone, with 5 fathoms of water on it, and so steep that, up and down, at its edge, there are 27 fathoms; and this causes the sea to break heavily on it. It cannot be discerned at more than two miles off by day, in clear weather, and with great vigilance; therefore it ought, at all times, to have a wide berth. Its situation has been well ascertained.

At the distance of five leagues N.E. by E. ½ E. [*N.* 80° *E.*] from the Obispo is a rocky bank, to which, also, a berth ought to be given.

"In August, 1830, the brig *Abeona*, of Jersey, Capt. Stephens (assisted by Mr. Wm. Elliott) ran over the Obispo Shoal, or one very near it, according to chart, assisted by an excellent chronometer, and found only 2 fathoms of water; but not allowing for the length of the lead and bucket, which would give 9 or 10 inches more. The brig drew 11½ feet; the water was very smooth; she did not touch. The shoal was about 100 yards from East to West, and about two breadths of the vessel from North to South. There was some tangle close to the northward of the vessel, and the rocks under the vessel's bottom were plainly seen, with jetting points."

TRIANGLE.—To the north of the Obispo, at the distance of 24 miles, is the TRIANGLE, *(El Triangulo,)* which consists of three islets, lying about N.E. and S.W., in which direction they extend about seven miles. They are visible at seven miles distance, and send out spits and shallows, which render it improper to pass between them, or to approach them nearer than two miles to the W.N.W. of the northernmost. At six miles from the latter there is another islet of sand, of about half a mile in extent, which is very clear on the south part, and which sends a spit to the north; it is very low, and is covered with birds and some drift wood. The situation of these islands has, also, been accurately ascertained.

Of the three islets, forming the Triangle, the two eastern are two miles distant from each other, but they are connected by reefs. The westernmost bears from the easternmost, which is the largest, W. ½ N. [*N.* 75° *W.*] 8 long miles; and between the western and middle one is a channel, 6 miles broad, having from 18 to 30 fathoms, on sand, gravel, and rock. From the easternmost islet a reef extends, with a large rock above water, first to the N.N.E. and then to the N.W., forming a bow or crescent, two miles in length. From the north and east of the western island, shoals also extend to a short distance.

The soundings in the vicinity of the Triangle are 20 fathoms, on fine sand, at two miles E. by S. from the larger islet; 25 fathoms, sand, gravel, and rock, at seven-tenths of a mile; 28 fathoms, sand and clay, at nearly a mile to the S.E.; 20 fathoms, sand and gravel, at two cables' length to the south; 21 fathoms, from three to six-tenths of a mile to the south of the reefs which connect the eastern island to the middle one. To the W.S.W. of the middle isle are 21 fathoms, on sand and gravel.

In H.M.S. *Bustard*, in 1826, Mr. Dunsterville saw the sand-patch on the N.W. part of the Triangle, latitude (by alt. of ✱ *Polaris*) 20° 57′. It then appeared just even with the surface. Sounded in 40 fathoms, blue clay and rocky bottom, a sand bank E. by N. 3 or 4 miles.

SPEY BANK and KAY, about five miles from the westernmost Triangle, discovered 16th Jan. 1829, by the commander of H.B.M. brig *Spey*. At 4 *p.m.* the Triangle shoals were seen from the mast-head, on the larboard beam, bearing S.W. ½ S. about 8 miles; shortly afterward a sand bank was seen about N.W. from them. At 5 *p.m.* passed them on the north side, and found the bank to lie in latitude 21° 2′, long. 92° 12½′. The bank is very low, and a range of breakers lies to the northward. It has a hummock in the middle, appearing like a small hut, which may be seen, from the mast-head, at four miles off, in clear weather. At the distance of two miles north from the bank no soundings were found with a line of 35 fathoms. It must, therefore, be dangerous to attempt passing it by night, or in thick weather. *(Report of the Commander, Wm. James.)*

The BAXO NUEVO (NEW SHOAL) is a head of sand, which shews at low water, with various rocks, which also shew a little; the sea breaks upon it in ordinary breezes, and is so steep that, from 30 fathoms, in running two miles, you pass to 10 fathoms, and

and from that, in two cables' length more, you may be aground. This shoal is hardly of the extent of a cable and a half from north to south, and four cables from east to west, in extent. Its given situation is, as yet, rather doubtful; for the observations of latitude made in the two ships of the Spanish line, San Leandro and Dragon, when the latter was lost on it, differ six minutes; being, according to the one, in 21° 50′, and, according to the other, in 21° 44′. Its longitude, although not deduced from particular observations made on the spot, cannot vary much from the truth. Since the preceding was written, the shoal has been placed, by Don Ciriaco de Cevallos, in lat. 21° 50′, and long. 91° 50′, which is, we presume, correct.

ISLA DE ARENAS *(Sandy Island)* is placed according to the situation assigned to it, by Don Ciriaco de Cevallos, in 1804; it had been previously seen by Captain Miguel de Aldereté and Lieut. Andres Valderrama, on their voyage, in 1775. The eastern side is bordered by a reef, which continues to extend, in two long spits, to the West and N.W. 10 miles. Between these spits, on the west of the isle, there appears to be anchorage, between the reefs, in from 7 to 4 fathoms; but of this ground we have no correct description. Cevallos has determined the situation of the island, which is 22° 8′ N. and 91° 16′ W.

This isle is low, and forms nearly a parallelogram, in the direction of *N.* 48° *E.* to *S.* 48° *W. true,* three miles; its greatest breadth being two. It is foul all round, and a great stony spit extends from its north end, with some rocks above water, to *N.* 35° *W. true,* nine miles. From the S.W. part, another, of a like kind, extends *N.* 62° *W.* and *S.* 89° *W. (true),* 6 and 9 miles. Between the reefs there is a good harbour, to the W.N.W. of the island, sheltered from winds from the North round by East to S.W., with a depth of from 3½ fathoms, at two miles from the island, to 7 fathoms between the points of the reef.

The island BERMEJA is placed, as given by Aldereté and Valderrama, to the northward of Arenas; but these officers did not see it, though they sought for it, and thus we are not sure either of its situation, nor any particular relative to it. Cevallos also sought for it in vain. It seems possible that this and Arenas may be one and the same.

The NEGRILLO is a shoal of which many have spoken, without knowing its true situation. In the ship of the line, San Julian, commanded by Don Juan Joaquin Moreno, the declaration of the gunner, Manuel Sandoval, was taken, who said that, sailing in the ship of the line, *Buen Consejo,* commanded by Don Joaquin Olivareo, on his voyage from Vera Cruz to the Havanna, and nine days after sailing from the former port, they saw, about two *p.m.*, the sea breaking; and, having examined it with the long-boat, in which the declarant went, they found a rock of about half a boat's length in extent, to which they hung by the boat-hook, until they sounded at the boat's stern; with 120 fathoms, they found no bottom; and, though they repeated this with equal diligence, round the whole circumference of the rock, they found the same results. Upon the rock there was not more than 3 or 3½ fathoms of water: he added, that he had heard the officers and pilots say that this was the *Negrillo.*

The prime object of the expedition of Aldereté and Valderrama, in 1775, was to search for this shoal; but they never could find it, though they cruised for it over the whole space of sea, in which it ought to have been found, according to the old charts: subsequent information, however, which was given to Don Tomas Ugarte, proved its existence; and, latterly, Captain Cevallos has communicated information which he gained from the declarations of Don Domingo Casalo, captain of the schooner Villavonesa, who saw it on the 14th of November, 1806, at 3 *p.m.*, and it turns out to be in 23° 25′ N. lat. deduced from an observation taken at mid-day, with all care, and long. 83° 55′ W. of Cadiz, or 90° 12′ 37″ W. of Greenwich, as deduced from the points of departure from the Campeché soundings and the making of Vera Cruz, which leaves the longitude questionable only to an error of 4 minutes. According to the description of the Captain, this shoal is no more than a rock of one quarter of a cable in extent, N.E. and S.W., over which the water washes, except at the two extremities, which show a little; but these could not be seen above a cable and half off, and, at less than a cable from it, no bottom could be found with 75 fathoms.

IN ADDITION to the shoals already described, it seems that there is, somewhere about the northern part of the great bank, a shoal of some extent, and, in part, very shallow. It is described to have been found, in 1768, by the sloop Podre de Dios, (*Power of God,*) but the account is so confused as to afford no satisfactory result as to its longitudinal

tudinal position. It must, however, lie to the eastward of the Negrillo. In lat. 23° 15′, 50 fathoms were found; afterwards, on an undefined course to the N.E., 14 fathoms, on a rocky bottom. Here, at one *a. m.*, they anchored until day-light, after which they weighed and continued to the N.E., sounding frequently, and in a short time found six fathoms, and saw in the bottom great heads of black rocks, with some patches of sand, which were avoided by steering to the East. On this course, in two hours, they had 50 fathoms, bottom of sand; resuming a N.E. course, the water increased to 70 fathoms; but, at mid-day, they found 40 fathoms on rock, when their latitude, well observed, was 23° 28′. From noon until day-light of the next morning, the vessel sailed always upon an unequal bottom of 38 to 47 fathoms, over rocks, and afterwards on sand, thence increasing the depths, so that at noon, by observation in 23° 46′ N. they had 74 fathoms, with the prow to the N.N.E. They preserved the same depth until mid-night, when they got 38 fathoms on rock, and continued on this shoal until day-light, when they had soundings on sand; the water again increased; and, at mid-day, observed in latitude 24° 3′, and found 116 fathoms, sand bottom, whence they shaped a course for the Tortugas soundings, on which they entered without any new differences in their reckoning.

From the ambiguous relation, of which the preceding is an abstract, we can only make out, that the soundings which this vessel ran over were from the meridian of the Alacranes to the eastward; that the edge of them reached lat. 24°; and that on the soundings were found various unknown shoals, which seem likely to be dangerous to navigation.*

In December, 1801, Don Dionisio Galiano passed over an extensive sand-bank, exhibited on the new Charts, which lies about 24 leagues to the eastward of the Negrillo, and having, on its S.W. part, 16½ fathoms. As it does not appear to be dangerous, it requires no farther description. The situation seems to be well ascertained.

THESE ARE THE SHOALS, which, down to the present time, have been known as existing on the Campeché Bank of Soundings. He who navigates on it, in 20 fathoms, will go clear of the *Corsario*, *Alacranes*, and *Sisal Reefs*; and in a secure track for passing through the channels formed by the shoals on the western edge. Of all these channels, the best is that between 21° and 22°, formed by the Triangle and New Shoal, (*Baxo Nuevo*), because it is the clearest; and we recommend it always to be taken by those bound to the west. The soundings which conduct the mariner through the middle of it, and clear of the shoals on each side, are tolerably regular; for, after he is to the north-west of Point Piedras, if he continues the course *W.S.W.* and *W. by S. true*, he will increase the depth, in a short time, to 23 and 24 fathoms, on fine white sand, or coarse white sand with gray spots; and thus he will run progressively to 30 and 35 fathoms, in which depth he will find some clay; and, so soon as he gets 40 and 45 fathoms, the bottom will be of loose clay, a certain sign of being to the west of the shoals. In this channel, and almost in the middle of it, there is a shoal of 29 fathoms, hard gravel, with a spot of rock of 10 fathoms, which can alarm those only who sound on it, by the idea that they may be near some danger. But they need not to be alarmed; for, sounding a short time afterwards, they will find the bottom sand and clay; and those who find this change will, of course, have a new mark for their situation, as this shoal is in mid-channel, and almost in a line with the shoals.

SHOALS OFF THE NORTHERN EDGE OF CAMPECHE' BANK.—The first, which we have distinguished by the name of the *Argus*, was seen by a lieutenant of the Spanish navy, Don Sebastian Rodriguez de Arias, commandant of the brigantine Argus, in sailing from Vera Cruz to Havanna, at 2 *p. m.*, 11th of July, 1818, being then in latitude 24° 2′, and longitude 89° 44′, (from Greenwich,) discovered a break, which, on examination, disclosed a small bank, of about a cable and a half's length, in all directions, with a breaker of from 12 to 15 toises in the centre, on which the water broke heavily, although the sea was otherwise very smooth, and the wind very calm. At mid-day the commandant had observed in latitude 24° 4′; and at 5 *p. m.* he found the longitude, by lunar distances, 89° 56′, both observations to be depended on, and corrected to 2 *p. m.*, and, referred to the situation of the shoal, he made it in lat. 24° 3′ 30″, and long. 89° 42′. This shoal appears to be the same which was seen on the 19th of November, 1800, by

* Query.—Was it on any part of this shoal that H.M.S. Tay, Capt. Roberts, was cast away some years since?—*Translator.*

Don

Don Narcisso Riera, captain of the Spanish merchant schooner Catalina, bound from Campeché to New Orleans; but, as his longitude was deduced from dead reckoning, we have more confidence in the position assigned to it by Arias: nevertheless, navigators, sailing on this parallel, ought to be on their guard, lest the two dangers should really exist.

Bozo's Rocks.—Don Manuel Bozo, pilot of the Spanish bombard Nuestra Senora del Carmen, in sailing from *Vera Cruz* and *Terminos Lagoon*, towards *Havanna*, on the 8th of December, 1817, at day-break, saw a breaker, or rock, off the starboard gangway: the sea being smooth, and the wind moderate from the eastward, there was no doubt of its being a shoal, the extent of which he estimated at from two to three cables' lengths, extending N.E. and S.W.; and, on its ends, he saw two rocks or pinnacles, about three feet high, and his distance from it was from three to three and a half cables' lengths, where he sounded, and found no bottom with 70 fathoms: and, although he thought to examine it with his boat, he could not effect it, on account of the heavy break in the vicinity of the shoal; but he saw the spit of rocks, of which it was composed, running the whole length of the danger. Having corrected his reckoning, for 6 h. *a.m.*, the hour at which he saw the shoal, he found it lay in latitude 24° 6′, and longitude 91° 7′. At noon, he observed in latitude 24° 22′, with certainty, and this was only 1′ North of his *d.r.*; and, referring this to the shoal, by his run for six hours, he found its latitude by this to be 24° 7′, and longitude 84° 49′ West of Cadiz; nor could there be any considerable error in his reckoning, in three days sailing from the *Vigia of Chuxulù*, off which he had been at anchor.

This shoal appears to be different from the former, although its latitude is so nearly the same: the short time which intervened between his departure from the Vigia of Chuxulù and his making of the Tortugas Bank, when he found only 13 minutes of error in his longitude by dead reckoning, shows that its situation, as to longitude, cannot be materially wrong. The shape and circumstances of the shoal, as described by Bozo, also shows it to be different. Many old charts indicate a danger, with the word *doubtful*, almost in the same position; which, also, tends to confirm the belief of its existence.

Directions for navigating on the Campeche' Soundings.

It is undoubted that the eastern edge of this bank is an excellent corrector for the longitude of a ship: on running nearly north or south, every one who gets soundings on this edge may consider himself as in 86° 20′ W. of Greenwich, and thus those who sail from the eastward, to enter on the soundings, or bank, ought to sound frequently, in order to catch bottom at the edge, or in its proximity, in order to have this correction of longitude.

But this excellent mean of rectifying the longitude ceases to be so when there is great uncertainty in the latitude; for as the water between Cape Antonio and Cape Catoche at times runs to the northward, at the rate of 3 miles in an hour, it is necessary to allow for this, so as to enter on the soundings in a convenient parallel from which you may make a course to the S.W.

It is clear that, by steering S.W. or thereby, you may not only get soundings on the eastern edge, but also on the northern edge, in which case, having no certainty of the longitude, it would be very dangerous to direct the subsequent navigation by making courses to the S.W., in order to obtain the depth of 20 fathoms, and to pass at a proper distance to the east of the Alacranes. Such an attempt was the cause of the loss of a merchant-vessel, named the *St. Rafael*, which got a-ground on the eastern extremity of the Alacran Reefs; from which the other vessels of the same convoy, escorted by a ship of the line, *Santiago la Espana*, passed about 2 miles clear. This loss, which happened in 1795, authorises us in recording it, and in pointing out the necessary means of preventing similar mistakes in future.

Once on the Bank of Soundings, and having ascertained your latitude, or situation on its eastern edge, you may make the rest of the navigation by it with much security; for, placed on it, you have a mean of keeping a very exact reckoning, and free from the errors produced by currents. In place of a log-chip, in heaving the log, make use of a lead; for the lead, by resting firm on the bottom, will show the whole distance or rate that the vessel runs, whether that rate be caused by the wind or by the current; and, marking the bearings of the line, the opposite direction will be the correct course

which

which the ship makes good, and which requires no farther correction than for magnetic variation. It is true that, if there be much depth, this practice will be very difficult; but as, in general, on this bank, you ought not to sail in more than 20 fathoms, and in the rest from Point Desconocida to the shoals, there is no part so deep as 30 fathoms; there can be no reason why this useful method of ascertaining the vessel's place should not be adopted. Nor is the frequent use of the hand-lead of less importance; it ought to be constantly going.*

Many neglect sounding, because they are not aware of its importance. If, in fact, a vessel, which has to sound in 30 fathoms, *has to take in sail*, in order to heave the topsails aback, she cannot sound frequently; for, in doing so, half the day would be consumed in sounding; but it is well known that there is no necessity for so much work, in order to sound, even in more than 30 fathoms, as those well know, by practice, who manœuvre their vessels with propriety. In depths between 15 and 20 fathoms, they ought to make use of more than the lead hove or flown by hand; and for this it is indispensable to have seamen acquainted with this work; without which every vessel might be lost, that has to navigate over shoal places, on which, usually, the dangers are discoverable by the lead only.

Directions for those who navigate from East to West.

1st. You ought to shape courses, so as to compensate as much as possible for the effects of the currents which prevail between Cuba and Yucatan, and so that you may enter upon the Bank in 22° 15′, a little more or less. To be able to correct your course with judgement, and in good time, you should omit no means of observing the latitude; not contenting yourself solely with what the meridian altitude of the sun gives, but taking also those of any stars of the first magnitude, or of planets, when an opportunity offers.

2d. Attending to your reckoning, sound in time, that you may, at any rate, not pass far from the edge of the bank, without having obtained soundings on it; and, so soon as you have got them, correct your longitude by them, establishing thus a new point of departure.

3d. So soon as you are in 30 fathoms, heave your log, with a lead in place of the log-chip, that you may thus keep a more accurate reckoning, and free from the effects of currents.

4th. In the season of the Norths, you should be directed by the depths of 20 or 22 fathoms, which you will find in the parallel of 22°. Sail on this depth until you are on the meridian of Point Desconocida, when you will steer *W.S.W. true*, until you are on the parallel of 21° 25′, when you must run to the west, to pass between the Triangle and New Shoal.

5th. It is very adviseable to know the latitude by observation, for passing between these shoals, or in default of being very sure of the situation by your course, and the quality of the soundings off Point Piedras to the N.W., which offer a good mean of knowing the vessel's place; and, if both these *data* fail you, and you are in consequence doubtful of the situation of the vessel, you ought not to attempt passing between the shoals during the night, but to keep your situation during it upon the 20 fathoms, in order to take the passage by day, in which you will run no risk, especially if you incline your course to the direction of the Triangle; for that, as we already explained, may be seen at the distance of 5 miles.

6th. If a North comes on, while you are on this bank, the only alarm you can be under is, when the vessel is to the eastward of the meridian of Point Piedras, when it will be necessary to carry sail sufficient to proceed to the westward, without falling much from the depth of 20 fathoms, in order that you may pass the said point clearly and without danger from the Sisal Bank or Shoal: but this offers no great difficulty; for, there is little sea on this bank (Campeché Bank or Soundings); and, as the winds from the north are generally free, with very little difficulty you may clear the point.

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* See the chapter on the Mode of ascertaining Currents, on the Log-line, &c. in our Memoir to accompany the Chart of the Atlantic Ocean, 6th Edit. page 315.

7th. If the navigation is made in the season of the rains, or from May till September, you may sail nearer the coast, in 12 fathoms; and you may, also, from the time you are in 20 fathoms, abreast of the River Lagartos, steer *S.W.* (true), with which course you will run to make the lookout tower of Chuburna, from which, with your course parallel to the land, you will pass between it and the Sisal Shoal, without any other care than to keep in 5, 5½, or 6, fathoms, according to the vessel's draught; for, with ships of the line, and not having to anchor at Sisal, it will be best to pass outside of the shoal. At this time it is preferable to leave the bank by the south side of the Arcas; and, to effect this with more certainty, you will keep in the depth of 10 or 15 fathoms, until you cross the parallel of Campeche, when you will steer so as to leave the soundings in 19° 30′ or 19° 40′. The reason of approximating the coast more in the summer, is because, having in that season many calms, with squalls and continual rains, which at times deprive you of observations for two or three days, it follows, that the navigation among shoals is very unsafe. On the contrary, near the coast they enjoy more land-breezes, and the changes of the breezes are more certain.

8th. Until now we have supposed you to have entered on the bank with a good knowledge of your latitude, and for so much also, to have ascertained your position on the edge of it; but, if you enter on the bank with great uncertainty as to your latitude, which must always be the case when you are without observations for one or two days; in such a case, so soon as you have caught soundings, steer S.E. true, or as near to that as the wind will permit: with this course it is clear you will either catch the 20 fathoms soundings, or you will lose bottom very soon. If the *first* happens, you will have attained your object by getting into the proper depth to navigate with safety; having happily freed yourself from the dangers of the Alacranes, upon which you would indubitably have gone with any south-westerly course; for you will have caught the soundings on the northern edge of the bank, and in about 88° 47′ W. of Greenwich: in this case, from the time you catch 20 fathoms, you will run to the west, in order to retain them; and you cannot be certain of your longitude until you are abreast of Point Piedras, in consequence of having failed of observing your true situation by the soundings on the east edge of the bank. If the second of these cases happens, namely, running soon out of soundings, not the least doubt can remain that you are on the eastern edge of the bank, and you must steer to the S.W. to get the 20 fathoms depth, as we have already advised.

9th. You may also steer to the west, taking soundings in 23° 30′ of latitude, and running along that parallel in 50 and 60 fathoms of water on a sandy bottom, keeping afterwards so as to pass to the north of the Bermeja; but we are very far from advising this route to be followed, from two reasons; first, because we have seen that there are well-founded fears of shoals on the north edge of this bank, which as yet is imperfectly explored; and second, because, in the summer, you could not enjoy the advantage of the land-breezes, and the changes of the breezes, which you might have in the proximity of the land, and your voyage would thus be rendered longer.

As we have said all that is necessary to be kept in mind for navigating on this bank from east to west, we shall now give some notices for sailing in a contrary direction.

Directions for navigating from West to East.

1st. It is evident that, to enter on the Campeché Bank by its western edge, nothing more is necessary than the latitude; for, running on a free parallel, you proceed without risk of shoals on the bank; and, whatever may be the error of longitude, you can correct it so soon as you strike soundings: but it must be remembered that the tract between the New Shoal (Baxo Nuevo) and Bermeja Island, cannot be considered as clear; for we neither know the situation of the latter, nor are we even certain of its existence.

2d. Having entered on the bank, it will itself indicate when you are to the eastward of the shoals, which will be when you have less than 27 fathoms, and then the quality of the bottom will be of sand, if you have entered to the north of the Arcas; but if you have entered to the south of them, you will keep on clay to 12 and 10 fathoms.

3d. But, if you have to enter on the bank, while uncertain of the latitude, and in obscure weather, as there often is when the Norths blow, it is adviseable to shun, as much as you can, entering on it by night, and endeavouring to make it by day, between the

the Triangle and Arcas; or it is even better to keep to the south of the Arcas; as a little more or less than the latitude by account will answer for this; but you must remember that the north winds always produce currents to the south: and from this you will always find your vessel more or less to the south of the reckoning: under this circumstance you may expect the effects of the current to be about 18 miles in 24 hours.

4th. If in this case, when running to the east, you have soundings on the edge of the bank, you may continue to the east, although it be by night, so long as you find clay; but the greatest attention must be paid to sounding frequently, so long as you do not consider yourself to the eastward of the shoals; which, as we have said, will be so soon as you have less than 27 fathoms. This remark is most essential, and of itself will save any vessel from being lost; for if, sounding in more than 27 fathoms, you find gravel and sand or rock, it is an infallible sign that you are near some shoal; which known, you should immediately steer S.W., in order to get again upon the clay soundings, when you may steer again to the East; and so soon as you are past the shoals, and to the east of them, you need take no other care than to steer in to the East, because the bottom is the only object you have to guide you, whether it be to go to anchor at Campeché; to lie-to till a North blows over; or, beating to windward on the bank, until you can leave it by its eastern channel.

5th. Beating to windward on this coast is very easy, and the navigation expeditious, especially in April, May, June, July, and August, because in these months the winds during the day are changeable from N.W. to N.E., and the land-breezes are from E.S.E. to S.E. during the night; with which you may navigate towards the east with very advantageous tracks, which tracks ought to be managed so as to stand off shore into 20 or 22 fathoms with the land-breeze, and turn towards shore with the sea-breeze as far as 6 fathoms.

6th. On this bank the sea is very moderate, even with heavy Norths; and thus even a vessel which finds herself between the coast of Vera Cruz and this bank, ought not to forget that, when a North comes on, she may find security on it, either to lie-to, in from 20 to 8, or 6, fathoms; or to anchor in 8, 6, or 4, fathoms, according to the draught of the vessel; and if she find herself in about the parallel of 20°, and is afraid of falling to leeward and getting a-shore on the coast of Tabasco, she ought immediately to prefer steering East, in order to get upon the bank, and take advantage of it.

7th. We shall conclude these directions with one about the mode of leaving this bank, when you navigate from Campeché to the north, bound to any of the harbours on the northern coast of the Gulf. In the manuscript directions, (those formerly called Pilot for the Mexican Gulf,) which we have beside us, and which are the only ones compiled until now, it is advised that, sailing to the north until you pass the parallel of Sisal, you should then steer N.N.E., on purpose to run out between the Negrillo and Alacranes, following the said course to the 24° of latitude: here it is proper to remark, how arbitrary these directions are; for they are written as if the writers were certain of the situation of the Negrillo, which they were not; and even if they had known it, they ought (it seems to us) to have been a little more cautious in giving their directions, than to have advised passing by a strait formed by two shoals; of which, if the one is dangerous on account of its great extent, the other is no less so on account of its smallness; for it cannot be seen till you are almost on it. By following this route, the brigantine, in which went the mariner, by whose account we have placed the Negrillo, got within it; and it is very wonderful that this shoal has not laid navigation under a severe tribute, by causing the loss of many vessels.

It appears to us proper to advise, that those who wish to leave this bank, by its northern edge, should steer to the North, and so as to pass to the east of Arenas Island; and leaving the bank at such an hour as to be able to cross the parallel of 23° 30′; with day-light they ought to keep the same course, until they pass that of 24°, when they may shape their course as convenient; due caution being taken to avoid the Negrillo, &c.

Directions for Sailing to Campeche', by Captain (now Rear-Admiral) Mackellar.

CAMPECHE'.—"In sailing from Jamaica for Campeché, be sure to make Cape Antonio,* and steer to the West, so as to gain the latitude of 22° 0′: then steer W. ¼ S. 100 miles, sounding frequently, and having good soundings on the bank. You may then, with great confidence, keep in the soundings laid down in the new Chart, either in going within the shoal of Sisal or without it; but, in fine weather, I should always prefer making the land to the eastward, and then run down along the coast, in 5 or 6 fathoms. On approaching Sisal, keep the land freely on board, by your soundings; and, in doing so, you avoid the risk of running on it, either by day or night; for you will see the castle of Sisal five or six miles off, and you may run down in 5 or 6 fathoms. The great advantage of this will be, the certainty of land-winds off shore, from about four o'clock in the afternoon until seven or eight the next morning; the sea-breeze setting in generally from the northward and eastward. If you are in a vessel drawing more than 12 feet of water, avoid a shoal laid down in the Spanish chart, on which 2½ fathoms only have been found: this shoal lies off the village of Jaina, about 16 miles, which village, or any part of the coast, cannot be seen off deck; therefore great caution is necessary in running for, or leaving Campeché.

"*The town of Campeché* is situated in lat. 19° 51′ 15″ N. and long. 90° 28′ 15″ W. of Greenwich. Proceeding for the anchorage from the northward, and having advanced towards Point Desconocida, on the N.W. part of Yucatan, distant from it eight or nine miles, your depth of water will be from 5 to 6 fathoms; from this proceed to the southward, about S. by W., observing that you must not go nearer to the shore than six fathoms, until you are as far as the lat. of 20° 0′ N.: then, being in that latitude, and your depth of water 6 fathoms, if clear weather, you will see the land, which is very low and difficult to make out; from this, if the wind will allow you, steer E.S.E. or S.E. by E., until you make the land out plainly. The most remarkable spot on it is Fort St. Michael, which is a large white fort, on the very top of the hill. This is the first part of the land you can make out, and it may be seen in lat. 19° 56′, in 5½ fathoms. So soon as this is made out plainly, bring it to bear E. by S., and steer for it; you will then be in the deepest channel for Campeché, and may choose your depth of water to anchor in. When you have 4¾ fathoms, the steeples of Campeché are just in sight, from a frigate's deck; and when in 4½, the church at Lerma can be seen from the deck; the Point Morros, which is the S.W. extremity of the land, will bear S.S.E., and Campeché East; and, when in 24 feet, which is the depth I should propose for a frigate to anchor in, the tops of the houses at Campeché are just well in sight from the deck, bearing S. 83° E., Fort St. Michael S. 73° E., Lerma Church, at the bottom of the hill, S. 66° E., and Point Morros, the S.W. extreme of the land, S. 19° E.; your distance from the town will then be 9½ miles, and lat. 19° 53′ 47″, and long. 90° 37′ 30″ W. Should your ship be of less draught of water than a frigate, proceed on for fort St. Michael, keeping it bearing as above, and anchor in what depth you please, but within 3½ fathoms; in this direction the bottom is bad, being covered with large shells, and, of course, dangerous to anchor in.

"*In the event of running for Campeché, in hazy weather,* which often is the case on this coast, in the fore part of the day, I should recommend proceeding as follows:—After you reach the lat. of 20° 0′ N., haul up to the E.S.E., keeping your lead going; and should you not see the land, endeavour to get into the lat. of 19° 54′ before you are in less than 4½ or 5 fathoms of water. So soon as you consider yourself in this latitude, proceed to the eastward, until you shoalen your water to what may appear best to anchor in; taking care, if you have to beat up, not to pass to the southward of 19° 52′, nor to the northward of 19° 56′, for between these two latitudes is the deepest water, and anchor as near the latitude of 19° 54′ as possible.

Shoal westward of Jaina.—"In lat. 20° 12′ and long. 90° 41′, there is a small spot of ground with only 15 feet of water on it; but, running along, and keeping in 6 fathoms,

* The Particular directions, for Sailing from Jamaica to Cape Antonio, are given in the Second Part of this work.

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you will pass to the westward of it: the soundings near this part are very irregular, altering sometimes a fathom and a half between two casts; there is no other part on the bank where this is the case.

"*The town of* CAMPECHE' is a walled town with four gates, N.E. and S.W.: the North gate leads into the town from the sea by a pier of about 50 yards long; but the water is so shallow that small boats only can land, and then only at high water; the rise is about three feet. Though Campeché is walled, it has only a few guns on each angle. The military force does not exceed 500. The town is abundantly supplied with all kinds of stock, and Indian corn, but no water excepting in tanks. The principal wells are at the South gate, about half a mile off, and that not good. The population is great, and the natives active and well made. The trade is chiefly in logwood, turtle, cotton, cocoa, rice, bags, ropes, and other things made of the grass of the country. Stock is sent principally to Vera Cruz; British dry goods from Jamaica, most of which were formerly smuggled into Campeché, and thence to Vera Cruz, Tampico, and the other towns in the Gulf.*

"The great intercourse between Jamaica and Campeché, have made the military and citizens extremely attentive to the English in general."—(*Written in* 1817.)

REMARKS ON SAILING TOWARDS CAMPECHE', BY CAPTAIN J. W. MONTEATH.

ON rounding the bank of Sisal, in 12 fathoms, I hauled up South, until we had attained the latitude of Point Desconocida, and the depth of water 5 fathoms: steering in this depth, the first object I observed, was a large white building on the second lump of high land visible, and which is a fort (St. Michael's), two miles S.W. from the city. Steering on, the next objects that appeared were the steeples of the churches in the city. Steer directly for the fort, until in 3½ fathoms, when you will observe the village of Lamos, which lies five miles S.W. of Campeché. Steer in, keeping the church of Lamos on your starboard bow, until you bring it to bear South, and Campeché E. by N., when you may anchor in from 18 to 16 feet of water, at the distance of 4½ miles from Campeché; in this position, the depth of water, for above a mile, does not vary more than 12 or 15 inches.

During my stay, (from June 10th to July 10th, 1817,) I observed the tides were very irregular, and greatly influenced by the wind; so that ships (with the wind off shore) must pay attention, if drawing much water, to get under weigh, and run out farther into deeper water. On the 2d of July, the Fame, then drawing 17 feet, and lying in 3¼ fathoms, grounded with an off-shore wind, and in a few hours had only 14 feet alongside, and for three days never more than 16½ feet, until the wind shifted to the northward; and, had she not been a remarkably strong vessel, would have strained very much.

Vessels with hempen cables ought to be careful in picking out a clear berth, as a number of vessels, especially Americans, were formerly in the habit of heaving out stone-ballast where they lay: this is now prevented by a fine of 500 dollars being laid on any vessel that does so. Sand ballast is allowed to be thrown overboard, by shifting the vessel often, so that there is no danger of banks being formed by it.†

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* It has been stated, from authority, that a frigate cannot safely approach the town of Campeché, nearer than 10 or 12 miles. Here the best anchorage is in 3¼ to 3½ fathoms, bottom of sand and broken shells, with the spire of the cathedral bearing E. by N. Boats can hence sail to and from the shore, with the sea and land breezes. The landing-place consists of a long jetty projecting 150 fathoms from the middle of the town. The landing may be made on either side, according to the wind; but it is difficult in blowing weather. (More copious descriptions of this place are given hereafter.)

Here is a regular tide of ebb and flood, running from north to south, which, on the full and change of the moon, after northerly gales, rises from 5 to 8 feet; at other times not more than two feet. High water at 4 h. 45 m. *Variation,* 7° 30′ E. 1819.

† In the month of July, 1828, it was announced, by the Fredonian consul, that, according to the new *Arancel* of Mexico,—"Every vessel that anchors here is liable to pay full tonnage money, whatever may be the motive of arrival, whether to ascertain the state of the market, to receive instructions, to get a pilot, to repair damages, to obtain bread, or even water.

"The three manifests required to be ready in the act of anchoring, by section 7 of the *Arancel,* must be equivalent to minute invoices of the cargo, by section 8; and any error in quantity or quality

Remarks made on a Passage to Campeche', in H.M.S. Bann, 1819.

Those bound to the westward, after taking their departure from Cape Antonio, should make allowance for current,* and endeavour to gain soundings on the Campeché Bank, in the parallel of 22 degrees, where there are 30 or 28 fathoms of water, and coarse white sand. The bank is very steep-to. With a W. ¼ S. course from thence, keeping the lead going, you will gradually decrease your soundings; the bottom sandy, and, in some places, with bits of broken shells. This course will lead three or four leagues to the northward of *Sisal Bank*, which has been described. Be careful not to approach this bank into a less depth than 11 fathoms. By keeping on, as above directed, until you deepen to 17 or 18 fathoms, sand and shells, you will have advanced about 20 miles to the westward of Sisal Bank, and may haul up, steering S. by E. When you shoalen into 5 or 4½ fathoms, make a South course good, keeping in that depth. The soundings shoalen regularly toward the shore. The land is low, and, seen from the deck, appears like islands, until as far south as Jaina or Gayna; from thence it becomes connected to Point Morros, four leagues to the S.W. of Campeché, and there appears in hummocks. The cathedral and steeples of the churches of the city may be seen, in fine weather, at five leagues off. Bullocks and stock, with turtle, may be procured in abundance, and very cheap. Water is scarce.

Route of H.M.Sp. Bustard, Mr. Dunsterville, Master, *from* Jamaica *to* Campeche', *in August and September*, 1826.

Dark cloudy weather, with frequent squalls from the eastward. The current from South Negril, Jamaica, to Cape Antonio, Cuba, set west, ten miles per day. Between

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quality will incur the penalty of duties, by section 9, and of confiscation, by section 10, however evident and innocent the mistake may appear."

Such fiscal regulations require to be known; but demand no comment. Experience, the old folks say, must be *purchased.*

* *Note by Lieut. Evans.*—It is to be recollected that here the currents are various; that is to say, they do not run constantly in one direction. Unless the set of the existing current be ascertained or actually known, it would perhaps be but making error more erroneous by adding allowance for current. Should a S.E. set prevail, as it sometimes does, the error would be doubled by allowing for a flow of the waters to the N.W. The season and prevailing winds should be particularly taken into consideration. On the 11th of March, 1819, on a course N. 65° W. 90 miles from Cape Antonio, we found the current *East*, a mile and a quarter in the hour. The *Norths* were not over at this time.

The currents over the Campeché Bank are various. On the 12th of March we were set 18 miles North in the 24 hours, wind at S.S.E. The next two days we were set 13′ and 16′ to the South. (The north had been blowing strong in the Mexican Sea, and reached us at one *p.m.* on the 13th.) These are mere superficial or wind currents; a change of wind changes their direction. I should conclude, from the observations I made on this head, that, during the season of the Norths in the Colombian and Mexican seas, the motion of the fluent waters is toward the south, inclining either westerly or easterly as the wind draws on either side of the north point.

On the Campeché Bank, 9th of May, 1808, at noon, in lat. 22° 28′, long. 86° 32′, no bottom with 80 fathoms of line, although the water appeared discoloured: making a S.S.W. course good, we struck soundings in 30 fathoms, red coral rock bottom, in lat. 22° 11′, long. 86° 39′; thence, running S. by W. ¼ W. corrected course, 9 miles, sounded in 17 fathoms, fine white sand, lat. 22° 5′, long. 86° 42′. Standing on, four miles farther on the same course, gained 16 and 15 fathoms. On the other tack, making a true course E. by N. 46 miles, the soundings were 14, 10½, 11, 12½, 13, 14, 17, 20, 25, and 30, fathoms, coarse white sand.—*Jn. Evans*, 1808.

To the preceding may be added that, when N.N.W. ½ W. from Cape Antonio, in latitude 23° 16′, and longitude 85° 37′, H.M.Sp. *Bustard*, bound to Vera Cruz, in May, 1826, had been set by the current 66 miles due North, in the last 24 hours. Winds from N.E. to S.E. Four persons, on this and preceding days, had observed the sun's altitude with two sextants and two quadrants. On the following day, at 3 *p.m.* calm, the current was tried, and found to set N. ½ W. Next day, at noon, it had set the vessel 41 miles due North, when in latitude 22° 53′, long. 85° 17′, light breezes from E.N.E. to S.E. This appears to have taken place on the eastern border of the northerly current, or near the line where the northerly and southerly streams '*brush*' each other.

The *Bustard*, on the edge of the bank, in lat. 22° 13′ and long. 86° 16′, found a current setting N.N.W., 15 miles in the 24 hours. In 22° 13′ and long. 87°, on the bank, sounded in 25 fathoms, fine white sand. In 22° 11′ N. and 89° 16′ W. found that a current had set 21 miles to the northward and 13 to the westward. In 20° 59′ and 92° 44′, on the *western* edge, found 120 fathoms. Hazy weather and fresh breezes from the E.S.E. The breezes while on the bank, during the day, were from N.N.E. to N.E., and, at night, from E.S.E. to S.E. Moderate and fine weather.

Cape

Cape Antonio and Cape Catoche the current set W. by N. 17 miles in the 24 hours. In latitude 22° 12′ N. and long. 86° 56′ W. sounded in 32 fathoms, fine white sand and shells, which kind of bottom will be found in this parallel as far as 90° W. Variation, ship's head to the westward, 7° 40′ E.

We ran along the land at night to the westward, from off the Vigia of St. Clara, in 4 and 3½ fathoms, off shore about 4 miles, and the ground preserving such a general uniformity that the lead may be depended on: at about two miles off are only 2¼ fathoms: the land and sea-breezes are very regular, though occasionally, for a few hours, interrupted by heavy squalls from different points of the compass. The Vigias or Lookouts on the coast have nothing particular to distinguish them from each other, and are built of wood, no thatch being on them.

The Castle of Sisal may be seen at three leagues off, and with Monte No-te-perderas is a good mark for assuring your position. There are several thatched huts near the castle for warehousing goods for Merida. Long. of the castle (in running along shore) 90° 0′ 30″ W. At the castle are about fifteen guns mounted, and the anchorage is three miles from the beach, in from 3½ to 5 fathoms, rocky and coarse ground, the castle from S.E. by S. to S. by W., yet on several parts of the coast better anchorage may be found. Here we, in H.M. sloop Bustard, obtained a pilot for Campeché, by sending our boat on shore, yet gaining a pilot cannot always be depended on, nor is one requisite, as you may round the coast thither by the lead, keeping in the best depth according to the size of the vessel you are in: in one of 12 feet keep in 3¼ and not exceed 3½ fathoms, which will bring you in sight of Campeché. No supplies of any kind can be procured at Sisal.

Sisal is a small fishing and turtling town, about 25 miles N. by W. from Merida. The land from this place to the castle of S. Josef is very low, and from 3½ fathoms, in some places, it will be visible only from the mast-head: but from S. Josef to Point Morros, which is the S.W. point of the bay, the land is high, and forms a most excellent mark when off Campeché. Point Morros may be readily recognized from its resemblance to the Rame Head, near Plymouth, and has a tree on its summit.

Though the land in the environs of Campeché is high, yet the city is situated very low, on a sandy plain, commanded by two forts, S. Josef to the northward, and S. Miguel to the south, and these also afford the mariner great facility for pointing out his ship's place.

When off Point Morros, two or three miles, we observed several patches, apparently of shoal water, but whether it was the reflection of a cloud or the bottom of white sand was not ascertained. Every one, however, should be cautious, when off the point. We were in 2¾ fathoms.

On the 17th, anchored off the city in 2½ fathoms, Fort S. Miguel S.E. by E. ½ E.; Point Morros S. ¾ W.; weighed and run two miles inshore, and anchored with S. Miguel E.S.E. ½ E., Lerma church, (which is situated close to the beach about 3 miles south of Campeché) *S.S.E.*, Point Morros S.S.W., St. Josef E.N.E. ¾ E. in 2½ fathoms, but the ground is not very good, being shelly. There is a channel of 2¼ fathoms, close to S. Miguel, by keeping close in-shore from Lerma, and the cathedral bearing N.E. by E. or N.E. by E. ½ E. In pulling in from the vessel E.S.E. ½ E. we passed over a bank with 10½ feet into this channel. With 2¼, and, in some places, nearly 2½, fathoms, we were not quite three miles from the city.*

On a W.N.W. direction from the city, about four miles, is a bank, extending from the shore, with only 8 feet, in some places, over it; and on this small vessels lie when light. The rise of water here never exceeded two feet three inches at the full of the moon, and the waters were not affected by it, being the daily rise and fall. The rise commences about 10 *a.m.* daily, previous to the sea-breeze setting in from the N.W. by W.; at 3 *p.m.* it hauls gradually to the northward, with a fresh breeze; and at 9 or 10 it veers round to the E.N.E. off the land.

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* On the 29th of January, 1831, H.M.S. *Ranger* anchored off Campeché in 3 fathoms, with Fort S. Miguel E. by S.; the Cathedral East; Fort St. Josef E. ½ N.; off shore 8 or 9 miles: winds prevailing from the eastward, with occasionally light sea-breezes from the westward.

The

The City of CAMPECHE' is surrounded by a wall, having four gates, and forms eight bastions of fortification, the guns on which are not all mounted. Water is particularly scarce and brackish. The city is supplied from wells in the suburbs, and brought in barracoes on drays for sale. Beef and vegetables are very good, and the market time is at sun-rise daily. Fruit is scarce, melons excepted. The troops are clad very well, and clean; but do not, on a field-day, perform their manœuvres well. The trade is trifling, owing to the heavy tariff laid on all manufacture. The latitude of the city, deduced from estimated distances while at anchor, 19° 51′ 10″, and longitude, by chronometer, 90° 32′, ~~by lunars, mean of three sights, 90° 28′~~. The anchorage of H.M. sloop Bustard, 19° 50′; long. by chronometer, 90° 36′; lunar, 90° 32′.

The mode of communication with the capital, MERIDA, is by canoe to Sisal. Swamps in the interior prevent any other conveyance. This city is invariably very healthy.

On the 3d of February, 1827, the Bustard again visited Campeché, and anchored off the city, with strong easterly winds. "Should these continue a few days, the inhabitants say that the strong Norths are at an end; and with these winds the water is very low." The deepest water is with Fort S. Miguel and the fort on the beach in one, bearing E.S.E. ¼ E. or E.S.E. distant about 2¼ miles.

REMARKS *made in the* BUSTARD, *when bound from* JAMAICA *to* VERA-CRUZ *and* CAMPECHE', *in December*, 1826, *January and February*, 1827.

With strong N.N.E. winds we passed over the bank of Campeché in the parallel of 22° 36′ North. On the 3rd of January saw the Alacran Reef, the north point of which, by mean of two sextants, lies in latitude 22° 33′ 10″, and longitude, by chronometer, 89° 39′. The east end, from *estimated* distance, deduced from the above, lies in 22° 28′ North, and 89° 30′ West. Three banks of sand and rock were discerned on the reef, two on the S.S.E. end, and one on the N.W. point. The reef appeared very steep, the water being not discoloured within twenty yards. The current set to the westward, a mile an hour; and, with strong easterly winds, allowance must be made. The Admiralty plan, published in 1825, places the north end of the reef in 22° 47′ North; whilst, in H.M. sloop Bustard, we passed north of it about 2½ or 3 miles, and had good observations, making it in 22° 33′ 10″ North, being 14 miles to the southward of chart. The longitude differed only three minutes, being 89° 39′; the plan 89° 36′ 19″.

On the 13th of January we anchored at the *Arcas Islets*. These are three in number; two are nearly even with the surface, but the northern one is about 20 feet high, and discernible about three leagues off. We found the Admiralty plan correct. The Bustard anchored in 6½ fathoms, hard bottom of clay, sand, and rock, with the S.E. Arca N.E. ¾ N. two or three cables' length from shore; but, to remain any time, you should anchor close under the Northern Arca, in 4 or 4½ fathoms, which anchorage is far preferable to Campeché at this season. Latitude of the anchorage 20° 12′, and longitude 91° 54′ 40″. Run along the land from the northward to Campeché, in 3 and 3½ fathoms, hard sandy bottom, and while at anchor experienced strong northerly gales. The sea was not high, and the vessel did not scend more than two feet.

On the 20th of February, the Bustard, from Vera-Cruz, again sailed for Campeché; and, with strong E.S.E. winds, found no current. The ship entered on the bank in latitude 19° 50′, and longitude 91° 55′. Sounded in 35 fathoms, fine small broken shells; which bottom is very unusual, it being generally of light brownish clay.

2.—THE SOUTHERN COAST, FROM POINT XICALANGO TO VERA-CRUZ.

Beaufort's Mem. Map. 45 & 46. p. 236

THE PROVINCE of TABASCO, adjoining that of Yucatan, is bounded on the west by Vera-Cruz. Of the soil and climate, generally, the one is described as unwholesome, and the other unfruitful. The coast was formerly much frequented by the English logwood cutters, who carried on a profitable trade with the Spaniards. The inhabitants, in many places, have farms, well stocked with cattle, and great plenty of cocoa.

The

The principal harbours to be described within this division are those of ALVARADO and VERA-CRUZ; the last being the emporium of the Mexican Provinces.

FROM XICALANGO POINT the distance to the River of S. Pedro is 32 miles. The high lands of the interior between are the *Altos* or *Heights* of *St. Gabriel*. From S. Pedro River the coast trends *S.* 75° *W. true*, 55 miles, to Tupilco River: it forms, from this bearing, a slender bay, only five miles in depth. From Tupilco River to the bar of Santa Anna the coast trends more to the south, forming a bay, *S.* 52° *W. true*, 31 miles.

All the portion of coast between Point Xicalango and the River of S. Pedro is named the LODAZAR *(Muddy Place)*, for the bottom is of such loose soft clay, that there have been instances of the hulls of vessels being saved which had been driven ashore on it by the *Norths*.

Between the Rivers of S. Pedro and Sta. Anna are those named *Tabasco, Chiltepeque, Dos Bocas*, and *Tupilco*. The bars of St. Pedro and Chiltepeque have 7 to 8 feet of water, and those of Dos Bocas and Tupilco about 4 feet; that of Tabasco, which is deeper, forms two mouths, separated by the Buey Islet; in the eastern one there are 8 feet, and in the western 10 feet: we can say nothing of the channels of these bars, which are changeable, excepting that of St. Pedro, which remains fixed in the middle, between the two points of the river.

All the coast from Xicalango to Sta. Anna is clean; so that, from the Lodazar to Chiltepeque there are 4 and 5 fathoms, at a mile from the shore, and 10 from Chiltepeque to Sta. Anna; the quality of the bottom between the Lodazar and Chiltepeque is mud; from Chiltepeque to Dos Bocas, mud and rotten shells; from Dos Bocas to Tupilco, coarse sand, of an olive colour; and, from Tupilco to Sta. Anna, coarse sand, with some shells, and partly gravel. In the mouths of these rivers there is mud, until clear of the heads or points of the bars. All this coast is rather low than otherwise, and is covered with palms and mangroves, from two leagues to windward of St. Pedro to Chiltepeque; and thence to Sta. Anna, with mangroves and thatch-palms.

FROM THE RIVER STA. ANNA, the coast trends West, true, for 38 miles, to that which is named *Barrilla;* and, in the intermediate coast, the rivers Tonalá and Goasacoalca discharge their waters.

The RIVER GOASCOALCA is 25 miles to the west from the bar of Santa Anna. This river may be easily known; for its eastern point forms a scarped mount, while the western is very low. At *S.* 34° *W. true*, nearly 4½ miles, you may see, on an eminence, a *vigia*, or lookout tower, with a house at the foot of it, which serves for a powder magazine; and rather more to the east is a guardhouse and battery, the flagstaff of which, at its eastern end, serves for a mark for the bar of the river. The depth on the bar is about 2½ fathoms, and, once over, it increases to 8, 14, and 16, fathoms.*

BARRILLA, or the LITTLE BAR, is 13 miles to the west of Goascoalca: the two rivers form an island. At N.N.W. ½ W. [N. 20° W.] 10 miles, from Barrilla, is the *Point of San Juan*, with an islet; and, 17 miles from it, N.W. [*N.* 35° *W.*] is *Zapotilan Point*, from which the coast trends, in a bight, 11 miles, to the *Point of Morrillos*, following afterwards to W.N.W. [*N.* 59° *W.*] 7 miles, to *Roca Partida* (*i. e.* the Split or Parted Rock.)

One league to the westward of Zapotilan Point is the mouth of the lagoon of *Sontecomapa;* and, to the S.S.E. of Morrillos Point, there is a vigia or look-out.

The coast between Barrilla and Roca Partida forms the base of the *Mountains of S. Martin*, the highest peak of which, the *Volcano of Tuxtla*, is 25 leagues from Vera Cruz.†

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* From a mercantile letter, dated Vera-Cruz, 5th March, 1828, it appears that there are dangers, not yet surveyed, off, or near the approach to, the Bar of Tonalá, and that of the River Goascoalca (or Huasacualco). Off Tonalá there are said to be two shoals; one near the shore and the other three leagues to the north. On the last, a few years ago, a brig bound to Laguna was lost, and a breaker may be seen on it in still weather. Neither these shoals, nor two reefs stretching from the mouth of the Goascoalca, on both sides, have been laid down in the charts, and a particular examination is therefore required in order to determine their existence and situation.

† This volcano broke out in March, 1793, and its eruptions are said to continue. It is plainly seen, in a clear day, from Vera-Cruz, which is 27 leagues distant, and is an excellent land-mark.

At

At W. ½ S. [*W.* 4° *N.*] 37 miles from Roca Partida is the Bar of *Alvarado.* On the intermediate coast are the vigias of *Tuxtla* and *Barrancas.*

ALVARADO is situated 36 miles S.E. from Vera-Cruz, in lat. 18° 45′, long. 95° 44′. Its bar admits vessels of 12 feet of water, which, within the bar, are sheltered from every wind The entrance of the river is very narrow, and cannot be seen until bearing from S. by E. to S. by W., and at a short distance; it is, however, very easily found by a remarkable sand-bluff about one mile to the east of the bar. The high land of St. Martin, called on the Spanish charts *El Volcan de Suntia,* which is 25 miles east of the meridian of Alvarado, affords a very remarkable land-fall, and a sure indication for this port. With the high lands of St. Martin E.S.E. by compass, 25 or 30 miles, and the sand-hill of Alvarado S.E. by E. 1½ mile, the bar of Alvarado will be South, distance one mile. Vessels bound here, on making the usual signals for a pilot, firing a gun and hoisting colours, will be furnished without delay. The pilot proceeds from the town in a long perogue, or canoe, manned by 8 or 10 rowers.—(*August,* 1822.)

We have been favored with another description of ALVARADO, which is as follows:—This harbour is formed by the mouth of Alvarado River, a river which extends into the interior beyond the city of *Guavaca.* It is so completely land-locked and shut in by sand-hills, that it is difficult to make out the entrance, even at the distance of three or four miles.

The hills form an uneven ridge along the beach, from the high land of St. Martin to about five miles beyond the harbour, where they merge into a black shelving point, another and a lower point being visible beyond it to the westward.

The highest and the most sandy of the hills, running down in a very uneven manner to a point, forms the eastern side of the entrance: the western side is bluffer, and is formed by the second highest hill, which has a grove of trees and a small look-out house on its top.

It is a bar harbour, with about twelve feet of water on the bar, which generally has a heavy breaking sea on it, and, of course, is very dangerous. The shore is very bold, and the soundings remarkably even for six miles, or more, on each side the harbour's mouth; you have 10 fathoms, muddy bottom, from the above distance to within a mile from the shore. The Volcano of Tuxtla, which is the highest part of the high land of St. Martin, bears E. by N., and the peak of Orizaba, covered with snow, due West, of Alvarado; the former about 35 miles, the latter at least 80. They are both visible on a clear day. During the bombardment of Vera-Cruz, Alvarado was the principal port of trade in Mexico.*

From the bar of Alvarado the coast trends irregularly to the N.W. for 16 miles, to *Point Salao-chico,* which is four miles to the southward of the Roads of *Morelia,* better known under the name of *Anton Lizardo.*

All the coast, from the bar of Sta. Anna to Anton Lizardo, is as clear as that to the eastward; but in every part, from the Lagoon of Terminos, to the point last mentioned, it is highly dangerous to anchor from October to April, on account of the strong North's blowing right on shore; and you ought even to avoid approaching it with any vessel that cannot enter over the bars which have been described; for it may very easily happen, in spite of all exertions, that you may be driven upon the coast; for the Norths are very strong, and it may be easily seen that, with them, there is no clear way of getting off.

MORELIA or ANTON LIZARDO.—The anchorage here, which is 14 miles from Vera-Cruz, to the S.E., is formed by various shoals and reefs, which form among them several channels: the latter are of easy access; especially when a fresh wind causes the sea to break on the shoals, &c. These shoals, although they do not afford any shelter from the wind, break the sea so much, that, even during the hardest Norths, vessels may

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* The ship George IV. Captain Thos. Hamlin, entered Alvarado on the 3d of January, 1824, but struck three times on the bar when going in. With the assistance of two boats, directed by a pilot, she attempted to quit the harbour on the 15th, by warping out, but it came on to blow, from the N.E. which produced such a sea as rendered it dangerous to persevere; next day ran into the river again; on Saturday, the 17th, made another attempt, to no purpose; but, on Thursday, the 22d, being calm, they succeeded in warping out, though not without striking several times.

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lie very safely at their anchors. The anchorage is spacious, and fit for all classes of vessels; the knowledge of it is of the utmost importance, to those who happen to be to leeward of Vera-Cruz during a North, and to those who cannot enter Vera-Cruz with these winds.

The numerous shoals which form the roadstead, are capable of affording shelter to a large fleet. The holding ground is excellent, being formed of thick mud and clay; and, from the circumstance of the wind, on this part of the coast, never blowing more than a fresh breeze from any other quarter but the North and N.N.W., the anchorage is as secure as most harbours, and capable of being extended a considerable distance to the southward.

Ships, in approaching Anton Lizardo from the southward, should be particularly careful to avoid the outer shoals, which lie to the north-eastward of the anchorage, and extending outward 9 or 10 miles, and dry at low water; and, as the tide seldom rises more than 4 or 5 feet, must be very dangerous at all times.

In approaching the land in the winter season, it will frequently be found that there is a haze which prevents your making it out, until you are close upon these shoals; it is, therefore, safest for ships to make the land to the northward.

The anchorage of Anton Lizardo was surveyed by Captain Francisco Murias, who made a plan of it in 1818, which has been published. The following are the directions given by Captain Murias.

"To run to this anchorage, although it has the advantage of having four entrances, with a sufficient depth, the two which the shoals form with the coast ought to be preferred; and of these the western is the best. To enter the latter, steer midway between the coast and Blanquilla Island, on a *true East* course (E. ¾ N. by compass), continuing so until some way within, when the course may be altered to North, for the purpose of anchoring where it suits. The best anchorage is to the N.E. and E.N.E. of Anton Lizardo Point, upon which are some houses, (the rising town of Morelia,) in 11 fathoms, on gray sand, and sand with shells."

The Castle, or fortification so miscalled, of *S. Juan de Ulua*, is about 4½ leagues N.W. by W. ¼ W. [*N.* 49° *W.*] from the Point of Anton Lizardo.

VERA-CRUZ.—The access to the port of Vera-Cruz is difficult and dangerous to a stranger, unless assisted by a particular chart and accurate directions. We therefore first give, from our former edition, a brief description by M. Chappe D'Auteroche; next, Directions and Remarks written, and obligingly communicated, by Captain (now Rear-Admiral) Mackellar; then brief directions by Don Cayetano Olivella, with Extracts from the Journals of Mr. Dunsterville; and, finally, an abridgement of the Directions previously written by Don Bernardo de Orta, in 1798, with some requisite emendations.

The north-western range of reefs, &c. as shown by the new Chart, are the Reef and Isle of *Blanquilla*, the Reef of *Galleguilla*, and the Reef of *Gallega*. On the S.W. side of the latter stands the *Castle of San Juan de Ulua*, which forms the eastern side of the harbour. The south-eastern range are the *Anegada de adentro*, (*Inner Drowned Ground*) the Reef of *Isla Verde*, the Reef of the Islet *Pajaros*, that of the *Isla Sacrificios*, and two small shoals. Besides these there are several dangers near the shore. The outer edge of the outer reef, *Anegada de adentro*, is five miles to the E.N.E. of the city of Vera-Cruz. These reefs, &c. are commonly called the *Inner Shoals* of Vera-Cruz. The *Outer Shoals* are those which lie about five leagues to the south-eastward of Vera-Cruz, to the north-eastward of the Point of Anton Lizardo and the adjoining coast.

M. Chappe D'Auteroche, in his 'Voyage to California,' to observe the transit of Venus, &c. 1769, described the port of Vera-Cruz. The city, he observes, is situated by the sea-side, and is surrounded, on the north, with barren sands, and, on the west, with bogs that have been drained; this makes the situation both disagreeable and unwholesome. The entrance of the harbour, he adds, is very dangerous; especially with the gusts of wind so frequent in the Mexican Sea: as the channel between the rocks is so narrow, that there is room for only one ship at a time. The wind from the north, bearing full upon the rocks, makes it exceedingly dangerous, at such times, to anchor in the passage. On the arrival of M. Chappe, 6th of March, 1769, the North wind prevailed, and blew so vehemently, as to render landing difficult; and he had no sooner entered the town than it blew a most furious hurricane. All intercourse with the ship was then cut off, and she had barely time to run for shelter behind the castle of

St. Juan d'Ulua, the only place where a ship can be screened from the north wind. M. Humboldt says, that the north wind here is announced by a great change in the barometer: during this wind, the mercury rises six or seven lines.

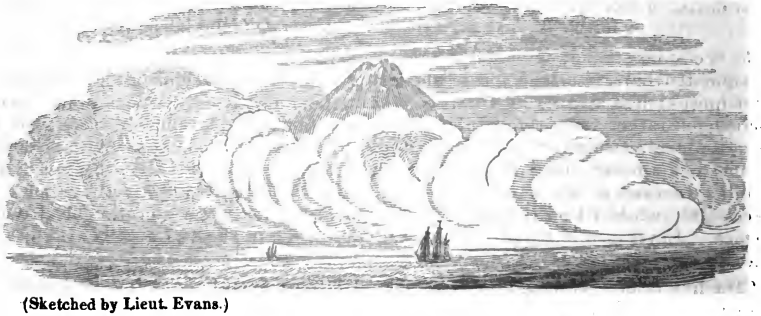
The harbour is formed by the Island of St. Juan d'Ulua, and is very narrow and dangerous, hardly affording room for a ship to swing, and is open to the northerly gales which so frequently blow in the Gulf. On these occasions the shipping generally run down to the Island of Sacrificios, situate 3 miles to the S.E., where they are secure.*

The shoals and reefs off POINT LIZARDO, are the only dangers in the track between Vera Cruz and Alvarado, excepting those already mentioned: it is much better to go between these shoals and the main land, than to go outside, because the reefs are steep-to, and have no soundings to seaward; whereas, inside the reefs the soundings are very regular and the anchorage good.

The CURRENTS here are very dangerous, and appear to be almost entirely influenced by the winds. The pilots and fishermen on the coast confirm this, and say that the winds act upon the current so immediately as to cause an alteration in its course within six hours.

The fort of S. Juan d'Ulua is considered impregnable; the island on which it stands may be blockaded by sea, provided a line of fortifications, or other means, were employed to prevent landing and ravaging the opposite coast, which is within gun-shot. The water within the castle is very bad, in fact merely the rain water preserved.

The principal land-marks to vessels advancing towards Vera-Cruz are the high mountains called the *Cofre*, or *Coffer, of Perote*, and the *Peak of Orizaba*, both of which are far inland, to the westward of Vera-Cruz. Still farther from the city to the E.S.E., but much nearer shore, is the volcano of Tuxtla, on the eastern part of the Sierras or mountains of St. Martin. The first of these, the *Cofre de Perote*, is elevated 2,548 Spanish toises, or 2,332 English fathoms, above the level of the sea. It stands in latitude 19° 29′, and about 13 leagues from the nearest part of the coast. It is the highest of the mountain ranges.



(Sketched by Lieut. Evans.)

Peak of the Cofre de Parote, W. by S. (by compass.) Estimated distance, by the angle of elevation, 81 miles.

The *Peak of Orizaba* may be readily known; it stands in about 19° 3′ North, 61 miles *W.* 9° *S. true*, from Vera-Cruz, and is always covered with snow. This mountain, of a conic form, became volcanic in 1545, and continued in action for twenty years, since which time there has been no appearance of inflammation. Though the summit be covered with snow, the sides below are adorned with beautiful forests of cedars, pines, and other trees. Its height has been given by the surveyors as 3,258 Spanish toises, or 2,981 English fathoms, above the level of the sea. It may be readily known, as it shows, at a great distance, in the form of an isosceles triangle, and may be seen to the distance of 25 leagues from the coast. The eastern part of the Sierras of St.

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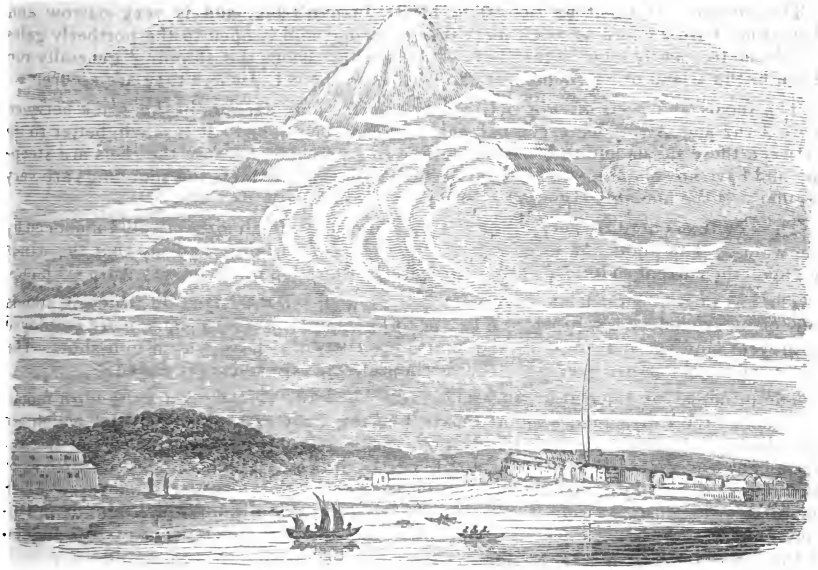
* *Vera-Cruz, 21st April*, 1828.—"Henceforth a Bill of Health will be required from every vessel entering this port;—and, in order to avoid difficulties and delays, it will be necessary for every master of a vessel to provide himself with such document at his port of departure."—*Isaac Stone*, Acting Consul for U.S.

A Low Reef, about two miles in length is said to exist at 21 miles N.E. by E. ½ E. from Vera-Cruz, and N.N.E. ½ E. from Point Lizardo, as shown in our chart of the Mexican Sea. This bank was again seen by Captain Stephens, of the brig *Abeona*, of Jersey, in August, 1830; who describes as above, and as correctly placed in the chart.

Martin

Martin lies about 27 leagues *S.E. by E. true*, from the port of Vera-Cruz. The light or fire of the volcano, if not always, may be occasionally, seen.



Peak of Orizaba, W. by S., by compass, as it appears from the Anchorage of Vera-Cruz. Seen by Lieut. Evans, in clear weather, 19th of March and 2d of April, 1828.

The occasional tedium on a passage to Vera-Cruz, if becalmed, will be relieved by the animated objects around; the fishes, birds, flying-fishes, and whales, the bonitos and dolphins; add to all, the glorious evening sky. At length the mountains may be descried, or rather the peak of the celebrated *Orizaba;* particularly when, the mist having suddenly cleared off, the sun may be setting behind it. A passenger, in describing this magnificent object, has said of it, "On a sudden, its towering peak, black with its own shadow, and appearing in the mid-heavens, became distinctly visible to our naked sight, while its base, and three-fourths of its height, were invisible from the distance. Enveloped in clouds, one of the most solemn effects I ever beheld was produced by this giant Atlas.

"The height of this mountain is estimated at 17,900 feet above the level of the sea. In a few minutes it disappeared from our strained and wondering eyes, and we remained like persons just awoke from an extraordinary dream. The lighthouse of Vera-Cruz was soon after in sight."

In the following morning, it was some time before the snow-capped summit of the mountain could be distinctly discerned from the white clouds by which it was surrounded, and then only by observing that one part of what appeared to be clouds remained stationary and unaltered. At noon of this day Vera-Cruz appeared, with its numerous towers, cupolas, domes, battlements, &c.—(*Bullock's Mexico.*)

Directions for Vera-Cruz, by Rear-Admiral Mackellar, 1817.

1. The harbour of Vera-Cruz is formed by the walls of the town on the south side, and by the walls of the castle of St. Juan de Ulua on the north. The castle is built on a small island opposite the town, and has a large reef of rocks running off from it to the N. by E. for nearly two miles: this reef is called the *Gallega*, and always shows a part above water. The harbour is bounded on the S.E. and East sides by three or four small islands and reefs, with good passages through between them. On the N.W. side is the principal entrance, on account of the ships getting easier in and out, and that is the only side which is clear and open to seaward.

2. The town is situated in lat. 19° 12′ 34″ N., and long. by chron. 96° 9′ W., by sun

sun and moon 96° 8′ 30″ W.* This port has a very good revolving light on the N.W. corner of the castle of St. Juan de Ulua; the centre of the lantern is elevated 79 feet above the level of the sea; the light is on the same principle as the generality of revolving-lights in the English Channel, having twenty-one lamps with reflectors, making seven lamps on each side of a triangle, which makes the revolution of the lights as follows:—From the first appearance of light, it appears bright about 6 seconds, then succeeds a faint glimmering for 40 seconds, and so on alternately. This light may be seen 20 miles off at sea, in clear weather.

In running for this port, I should recommend to you to get into the latitude of 19° 20′, before you pass the 95th degree of longitude, and from that proceed to the westward, keeping in that latitude: by so doing you will pass 10 miles to the northward of Anegada de Fuera,† and approach Vera-Cruz six miles to the northward of all the shoals that lie off from it.‡ If, in the night-time, a good look-out must be kept for the light, on the larboard bow; and, on making it, stand on to the westward, until it bears S.S.W. from you; then, if in the lat. of 19° 20′, you will be 8 miles from the N.N.E. side of the shoals off the harbour: here bring-to, with the ship's head to the northward, observing, during the night, not to approach nearer to the light than 5 or 6 miles, and to keep it bearing from you between S.S.W. and South; the S.S.W. bearing will keep you clear of any shoals that may lie to the eastward of the light; that is, more than two miles from it: and the South bearing will keep you clear of the N.W. shore. At day-light, in getting sight of the town, steer for it, observing the following directions.

3. Before you approach nearer than 3 or 4 miles of the town, bring the largest domed-top steeple, in the centre of the town, to bear S. ¼ E. [*South,*] it will then appear with two sharp spire-top'd steeples close to it, on the west side, and on the small hill behind the town. There is a division between part of the hill that is covered with grass, and part that is covered with sand; this division will be on with the steeples bearing as above; the grass part to the S.E.; and the part covered with sand to the N.W. With this mark proceed on to the southward, along the west side of the Gallega Reef; your soundings here will be regular, from 10 to 5 fathoms; and, when you are so far as to bring the S.W. side of the square building that the look-out house stands on in the fort to touch the N.E. side of the lighthouse, bearing about E.S.E., steer for it, taking care not to open the lighthouse to the N.E. of the look-out house, until you are close to the castle: this mark will carry you up to the lighthouse; then steer round it to the southward, and anchor close to the south side of the castle, in from 5½ to 4½ fathoms.

During the months of November, December, January, February, and March, the strong northerly winds prevail, and at times blow very strong, which occasion a considerable sea in the harbour; and, as the ground is not good for holding, I should recommend mooring in these months with the small bower to the N.W., and best to the N.E., in order that you may ride by both anchors, with the wind at North, and lay your stream-anchor astern, which will be sufficient to hold you with the land-wind, which seldom blows with any force. During other months of the year, moor with your small bower to the N.W., and best to the S.E., in order to have an open hawse to the eastward.

4. There is no regular tide here; but, in moderate weather, there is one ebb and one flood in twenty-four hours, or rather one rise and one fall in that time; for it is the case sometimes, that the tide runs to the N.W. for three or four days, and the same to the S.E., but it appears to be governed chiefly by the winds blowing in the same direction; as the wind blows, its rise and fall is from 2 to 3 feet; but in strong breezes, sometimes, there is neither rise nor fall for three or four days.

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* The Survey of the Port, made under the order of Don Ciriaco de Cevallos, gives the tower in the S.W. angle of the castle of St. Juan de Ulua in 19° 12′ 15″ N., and 96° 8′ 13″ W.—Ed.

† The *Outer Drowned Ground*, one of the outer shoals of Anton Lizardo, and six leagues E.S.E. ¼ E. [*E. ¾ S.*] from Vera-Cruz.

‡ In these directions, Admiral Mackellar seems to have assumed that circumstances are favourable. In order to guard against the effects of an unexpected *North*, or a northerly wind, Captain Hester, in some former directions, written in 1764, says explicitly, that none should fall to the southward of 19° 50′, or between that and 19° 40′, until the summit of Orizaba is seen, and that care should be taken not to bring that mountain to the westward of W.S.W. The Captain of the port, Don Bernardo de Orta, says, as shown hereafter, that the course should be made to windward on the parallels of 19° 30′, or 19° 40′, and especially so in the months of May, June, and July, when the sun is in the proximity of the zenith. It is, at least, clear, that the *safest* course is to the northward, particularly to such as cannot rely on their observations.—Ed.

5. The

5. The ANCHORAGE AT VERA-CRUZ is extremely bad, and, if once you part, there is no chance of saving your ship, having nothing but broken ground to leeward of you.

The men of war of the country always moor with the small bower to the N.W. in 5 fathoms, and the best bower cable to the rings in the castle of S. Juan de Ulua, with a cable over the stern to the S.S.W. in 6 fathoms, by which mode they lie so close under the castle, that they are, in a great measure, sheltered from the violence of the North and N.W. winds. I anchored, in June, 1817, by bringing the S.W. angle of fort S. Juan to bear N.E. by E. ½ E. about 600 yards off; from which bearing only four guns from the castle or out-works could be brought to bear on the ship. This position may be taken by running in to the southward of the castle, between the shoals of Galleguilla and Blanquilla, which always show themselves, and round the *Gallega Reef*, in 5 fathoms, until you bring the bastion of St. Crispin (on the south corner of the castle) to bear N.E. by E. ½ E. Drop your anchor on a quarter-spring, to act according as the wind and circumstances may require.

6. The town of Vera-Cruz furnishes no certain supply of any kind for ships, excepting water, and that bad; and, during the winter months, difficult to get off; as the sea breaks with so much violence on the pier as to prevent boats from landing for three or four days at a time. As the sea and land-breezes, throughout the year, are regular, there is seldom any difficulty in going in or out of the harbour. During the months of August, September, and October, the rains set in, with close sultry weather, and the vapours arising from the marshy ground makes the season extremely subject to the yellow fever, of which many hundreds die yearly, equal to a tenth part of the whole population, particularly strangers.

BRIEF DIRECTIONS FOR VERA-CRUZ, *communicated to Captain* LIVINGSTON, *by* DON CAYETANO OLIVELLA, 1819.*

Run in for Punta Gorda [lat. 19° 14½′] until the castle of S. Juan de Ulua bears S.E. by S., and then keep away to the south-eastward until you bring that castle to bear S.E. You will then steer so as to keep the foremost shroud of the vessel always on with the castle; that is, the foremost shroud on the larboard side; the bearings to be from the wheel or tiller of the vessel: keeping it so will lead you clear round the reef into the anchorage.

In case of parting one anchor, never attempt to let go another, but make sail immediately, and run the vessel right for the Mole: the current, which runs with great velocity, will not allow you to fetch the Mole; but, steering for it, you will fetch the beach at the S.E. end of the city; by which, at least, the lives of those on board will be saved: whereas, were you to take time to let go another anchor, it would not bring you up, but you would infallibly go on either the Lavandera Shoal, the Isle of Sacrificios, or the reef of rocks off the Punta de Hornos, in either of which cases not a soul could be saved.

You anchor under the castle of S. Juan, and near to it; the centre of the castle-walls bearing N.N.E. ¾ E. or thereabout.

Vessels should always keep their fore-topmast staysails, and such others as may be required to run them on the beach, ready bent.

The reefs generally show, either by breaking, or by the water's being discoloured; you moor with the bower-anchors to the N.W. and North, and a stream-anchor out astern to the S.W.

SACRIFICIOS, near Vera-Cruz.—The anchorage off the island Sacrificios is a secure one for a small number of vessels. It is out of the range of shells from the castle of St. Juan de Ulua, and well protected from the violence of the northerly winds by the islands and shoals about it. On the island is one poor Indian family.

The North is the only wind that blows with any violence here, and ships may anchor with perfect safety under the lee of the island, within about two cables' length, in 8 or 9 fathoms, good holding ground, the bottom being of mud and clay.

Ships getting under way and going to the southward should be careful to avoid the shoal off Point Mocambo, on the S.W., as it is very dangerous.

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* These directions for entering appear to be particularly adapted to small vessels.—ED.

In

In going to the northward, the dangers are all perceptible; for, with a moderate breeze, the sea breaks upon all the shoals; and, in a fresh breeze, with such violence, that the dangers are all pointed out.

The best passage in, from the northward, is between the island Blanquilla and the Gallega Bank, taking care to keep pretty close to the island, when you will carry 16 and 17 fathoms to within a cable's length of it.

In entering for the anchorage under Sacrificios you may run in from the northward, with the fort of St. Juan de Ulua and Vera-Cruz in one, bearing S.S.W. until you make the Isla Verde, or Green Island, and Blanquilla in one S.E. by E. ¼ E. Haul and keep the latter in a line to within about three-quarters of a mile from Blanquilla, then steer directly in, S. by E. for *Point Mocambo*, leaving Blanquilla and the Middle Reef on the larboard hand You may anchor in 8 fathoms, close within, at a cable's length from Sacrificios. The watering place is on the main land, to the west, in the beach of *Pampanos*, where a well should be dug for the purpose.

Neap-tides rise from 1½ to 2 feet, and at the equinoxes and solstices it rises from 2½ to 3 feet; this likewise occurs in a particular manner at the new and full moons of October. There is only one tide in the 24 hours, and the retardation is irregular in summer, high water happening in the morning, and low water in the evening. In winter it is just the reverse. Variation, in 1824, 10° E.

In January, 1827, when H.M.Sp. *Bustard* was at anchor under Sacrificios, the Peak of Orizaba bore W.S.W. ½ W. and the current set N.W. about one mile an hour. The fall of water was 6 feet. During the vessel's stay here heavy fogs prevailed, with the wind at South; and, as the sun increased in strength, at about 11 *a. m.* the fog cleared away, and the wind veered to the E.N.E. with fine weather.

Extracts from the Journals of Mr. Edw. Dunsterville.

In December, 1826, and January, 1827, H.M.Sp. *Bustard* was employed between Campeche and Vera-Cruz, when Mr. Dunsterville made the following Remarks:—

"On the 20th sailed from Campeche for Vera-Cruz, the wind N.E. and fine weather. Did not find any set to the northward, but to the westward ten miles per day; neither do I suppose that any current sets to the southward with the trade-winds. Yet, in a *North*, or previous to one coming on,* its velocity is about one mile an hour, due South.

"On the 6th of January the wind shifted from southward and eastward,† and blew fresh from the N.W. On the following day we found a current had set us 28 miles due South. Made the land of *Mariandrea* (in 19° 43′ N.), which is high, interspersed with hills, and gradually slopes to a low point, from which the land inclines to the southward, and becomes low.

"Vera-Cruz may be easily recognized, having no resemblance to any other part of the coast; being sand-hills, and the steeples of the churches and vessels' masts are generally first discerned. You may run in, by the eye, either of the passages between the reefs, for the anchorage under Blanquilla, Sacrificios, or under the castle of S. Juan, in the season of the Norths, which is at this period. I should recommend that of the Isle Sacrificios as the best and most safe anchorage, with the centre of the isle N. by E. in 7 or 8 fathoms, about 1½ or 2 cables' length off shore.

"The mountain [*Cofre*] of Perote is high and peaked, and sloping gradually on each side, with two little hillocks on its summit. The Peak of Orizaba is exceedingly high, and covered with snow: when seen from November to March, the inhabitants say it forebodes a North; yet this is not always the case, as I have seen it on three successive days quite clearly, though sixty miles distant, and no North blew for upwards of a week after."

H.M.Sp. Bustard had previously visited Vera-Cruz, in 1826. On the 28th of April she anchored under Green Island [*Isla Verde*] in 10 fathoms, with the centre of the isle N.N.E. ¾ E. and moored with two bowers. Mr. Dunsterville says, "In the season of the Norths bring the island to bear N. by W., anchoring in 14 fathoms. A strong current sets invariably to the N.W. between the reefs, even when it blows strong from the northward.

* Which may invariably be known by the heavy swell setting from the northward.

† Such winds, attended with rain, forebode a "North."

"On

"On the 5th of May we weighed from under Green Island, wind N.N.W., for the anchorage under San Juan de Ulua, the master having charge as pilot, one being refused by the Commandant of Marine. Worked to windward of the *Adentro Shoal;* run in between the Galleguilla and Blanquilla Reefs, having bore up when the centre of the castle bore S.E. by S. Abreast the Galleguilla we had 14 fathoms, gradually decreasing, as we approached the anchorage, to 4 fathoms. The best anchorage is with the centre of the Castle of S. Juan de Ulua N. by W. with one cable fast to the rings in the walls of the fortress.

"May 8th, weighed and passed with the sea-breeze between the reefs of Isla Verde and Pajaros. Anchoring under the reefs in 6 fathoms; veered to 35 fathoms; the light-house on the castle N.W. ½ W., Isla Verde N E. ¼ N. La Nymphe, French frigate, lay to the eastward of us, two cables' length distant.

"On the 11th weighed and passed north-westward between Blanquilla and Galleguilla Reefs in 14 fathoms, keeping nearer the former; as the swell, if the wind should be light, will set you toward it. However, the reefs invariably show themselves, and the eye is the chief guide.

"The water obtainable from the city of Vera Cruz is very bad; but, by putting a small quantity of lime in each tank, it was much improved. Eight or ten tons may, with ease, be procured daily. The beef is very bad, and vegetables to be obtained with great difficulty, and the small quantity obtainable is of the worst description. The yellow fever, at times, rages here with great violence, and affects, not Europeans only, but likewise the natives.

"Sea and land breezes succeed each other regularly, and occasionally a N.N.W. wind may blow for a short time."

TABLE *of the* DISTANCES *of the* PEAK *of* ORIZABA, *according to the apparent Angles of Elevation; supposing its real Height above the Level of the Sea to be 2,795 Toises, and the Terrestrial Refraction one-sixteenth of the intercepted Arc. By* DON JOAQUIN FERRER.

Distance from the Peak in Miles.	Apparent Angles of Elevation.	Differences for 3 and 6 Minutes.
63	2° 12′ 58″	8′ 37″
66	2 04 21	7 58
69	1 56 23	7 25
72	1 48 28	6 56
75	1 42 02	6 30
78	1 35 32	6 07
81	1 29 25	5 45
84	1 23 40	5 28
87	1 18 12	5 11
90	1 13 01	4 57
93	1 08 04	4 43
96	1 03 21	4 30
99	0 58 51	4 20
102	0 54 31	4 08
105	0 50 23	3 59
108	0 46 24	3 51
111	0 42 33	3 42
114	0 38 51	3 35
117	0 35 16	3 28
120	0 31 48	6 39
126	0 25 09	6 15
132	0 18 54	5 57
138	0 12 57	5 41
144	0 07 16	5 24
150	0 01 52	

USE OF THE TABLE.

The first column indicates maritime miles; the second the apparent angular altitudes of the Peak of Orizaba, corresponding to the miles stated; the third shows the variation of the angle of altitude, in 3 miles of distance to 31′ 48″, and in 6 miles to 1′ 52″.

EXAMPLE.

Suppose that the altitude of the rock above the horizon of the sea was observed to be 0° 59′ 00″, that the dip was 10′ 20″, what is the vessel's distance from the Peak of Orizaba?

Horizontal altitude observed, corrected for the error of the instrument observed with, 0° 59′ 00″

Dip..... 10 20

Apparent altitude of the Peak.... 0 48 40

Consulting the Table, it will be seen that this angle is comprehended between 105 and 102 miles of distance; and, without any other operation, it is at once seen that it is nearly 106 miles: but, if it is wished to determine it with greater accuracy, note the difference for 3 miles, which is at the nearest angle 3′ 59″, and with the difference between the angle observed and that corresponding to 105 miles of distance, is 1′ 43″; therefore the true distance will be $= 105 + \frac{3' \times 1' 43''}{3' 59''} =$ 106′ — 18″, or 105′ 42″.

DESCRIPTION

Description of, and Directions for, the Port of Vera-Cruz, from those of Don Bernardo de Orta, 1798.*

1st. The *Sierras of San Martin*, the eastern part of which lies about 27 leagues to the *S.E. by E.* true, from the harbour, near the coast, the *Peak of Orizaba*, and the *Cofre de Perote*, both of which stand at a distance to the west, and which, from their great elevation, are seen a long way out at sea, in clear weather, are objects which facilitate the making of Vera-Cruz. Should neither of the two latter be seen, the light or fire of the volcano of Tuxtla may happen to come in sight. After seeing either of these objects, the course will be regulated according to its bearing and circumstances, by reference to the Chart.

2d. It is assumed that, on quitting Campeché Bank, you will, in the season of the Norths, direct your course to Point Delgada, (latitude 19° 51′); but, even in the summer, you should, on no account, run in on the parallel of Vera-Cruz, as some directions recommend, lest you meet with its tempestuous Norths:† With these gales, and *even before they come on*, there are currents towards the south, which may, in some cases, lead vessels on the outer or inner shoals of Vera-Cruz, and particularly on the *Anegada de fuera*, or the *Anegada de adentro*; the course should therefore be made to windward on the parallel of 19° 30′, or 19° 40′, of latitude, and especially so in the months of May, June, and July, when the sun is in the proximity of the zenith.

3d. Having once seen the coast near Point Delgada, you will pass to the east of that point, Bernal, Bernal-chico, Juan Angel, &c. at the distance of from 4 or 5 leagues, and steering from S.S.E. to S.E. by S. until you gain sight of Vera-Cruz, or of the castle of San Juan de Ulua, without embaying yourself in the Bay of Antigua.

4th. If, from circumstances, you come in from a lower latitude than 19° 30′, the ship's place will be first known from some of the outer shoals, the breakers on which will be seen, if not obscured by thick weather.‡ Here, on approaching, the colour of the water, and the lead, if attended to, will give warning what ought to be done.

5th. To the most remarkable objects and points, on the coast above described, may be added the point which projects from that part of the coast named the *Sierra* of *Maria Andrea*, three leagues to the southward of Point Delgada; and, whenever this or one of the other points of the coast is recognized, you will proceed, according to judgement, for gaining the first leading mark for entering the harbour by the castle of St. Juan de Ulua.

6th. If, on approaching the harbour, you should see any of the edifices of Vera-Cruz, or masts of shipping, or the inner shoals, to the westward, you must of course be to the east of the given marks for entering, and also of the harbour; and, consequently it becomes necessary, according to where you may be, to shape your course to the S.W. or N.W.

7th. If the wind should, at that time, be *free* from the eastward, it will answer for running in at a prudent distance, around the Galleguilla, and Gallega Shoals, for the purpose of gaining the marks; but if it does not pass from E. by N. towards the North, it will be hardly sufficient to clear the Soldado Point, or western part of the Gallega Shoal, on advancing into the harbour. If, therefore, you find a scant wind on the starboard tack, or a North, you must luff, to pass the Anegada de adentro; and, effecting

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* Don Bernardo de Orta was captain of the port, or harbour-master, an intelligent man, and one of the few who got forward by merit in Spain, without, what is called, noble blood. He was superintendant of the posts at Vera-Cruz.

† A full description of these winds, which should be well known to the mariner, is given in our Memoir, &c. on the Atlantic Ocean, 6th Edition, pages 73 to 76. As that work is a requisite companion to this, we deem it unnecessary to repeat the description here.

‡ They are often observed during the Norths, and even after the rains commence.
Objects, generally, will be obscured when there are fresh breezes, the haze of which covers them, particularly as the Norths decline, until the rains begin. At times you may see the horses and carriages pass along the beach between Vera-Cruz and Antigua Bay, when the coast and high lands are invisible.

this

this, you will with ease also clear the Galleguilla. The northernmost points of these two shoals lie nearly east and west from each other, distant 3¼ miles. Blanquilla Island lies between them, but something to the south of that line of bearing.

8th. Should you happen to be thus situated when the north wind will not permit your clearing the Inner Anegada by tacking to the west, nor the Outer Anegada by tacking to the east, there will be no other resource than to keep away to the South or S.W., to take the possible shelter of Isla Verde, (Green Island,) or of the Isla de Sacrificios, (*i.e.* Sacrifice Island,) and riding in from 6 to 14 or 16 fathoms, on good holding ground, with two or three anchors down, until the wind returns to the regular breeze; but if, in consequence of your having anchored wide, the shelter should be insufficient, while you have a pilot on board, and the wind so fixed a-head that you cannot gain the harbour, or more shelter here, you will do well to avail yourself of a fit moment to run for the shelter which the Isla Blanquilla (White Island,) lying to the northward of the Point of Anton Lizardo, affords from the sea.

9th. Some have, from their temerity, incurred misfortunes which they might have avoided; for, having recognised the Outer Anegada, *(Anegada de fuera,)* they have followed the tack to the west with a scant wind, persuaded that they could free themselves: this does not always succeed, and never if the water runs with such velocity, as it does, with head winds, toward the channels of the shoals. The safest way is, considering the situation and the hour, if the wind does not permit a certainty of passing the Inner Anegada, (which lies about 4½ leagues W.N.W. from the Outer Anegada,) and of catching the harbour with day-light, to tack out to the eastward. You will thus leave the shoals astern, having been favoured by the current.

10th. If, being more to the west, you cannot on that tack weather the Galleguilla, near the Anegada de adentro, on the east tack, you ought, without a moment's hesitation, to keep away S.W. or S.S.W., so as to run in mid-channel between Anegada and Blanquilla; leaving the latter on the starboard, and Anegada with the Isla Verde on the larboard, side, keeping clear of all the breakers; and, steering successively to S.W. by W., W.S.W., and West, you will run along the south-east side of Gallega Shoal, leaving it to starboard, and the Levandera Shoal on the larboard; the shoal part and edges of which the breakers will plainly show; hauling up more or less to anchor, *seaman-like*, where you see others moored with two anchors, and you must let go the starboard anchor first.

In the same case, being more to the west, you may take the resolution to keep away to the south, to pass away between the Galleguilla and the Blanquilla Island, and successively in sight of the Gallega, by which you will run in, rounding it to the very anchorage. In good weather, with a middling-sized vessel, and a knowledge of the place, you can run in by these channels more commodiously than by the N.W. channel, and will not have the trouble of warping, if the breeze comes to the S.E.

11th. Those who are acquainted with the Inner Shoals will not often incur misfortunes; because, at the *Isla Verde* and *Pajaro Reef*, there is as good anchorage as at the *Isla de Sacrificios;* as there likewise is in the shelter afforded by the Blanca Island, off the point of Anton Lizardo, and that formed by the same point and some of the Outer Shoals; the channels of which, during a fair wind, and with a knowledge of them, are clear: thus you may run in by them, as among the Inner Shoals, to direct yourself to the harbour by the S.E. channel, *if your vessel does not draw more than* 20 *feet;* for the breeze raises some sea; and between the Gallega and Lavandera Shoals, in the narrowest part of the southern entrance, there is not more than 23 feet of water.

12th. If, in consequence of any irregular navigation or mistake you should have passed through any of the channels formed by the Outer Shoals, among them, or between them and the Point of Anton Lizardo, with a vessel of larger draught of water than 20 feet, and are obliged to enter by the N.W. channel, you must proceed as directed in the 6th paragraph.

13th. Having thus described the entrance into the harbour by the S.E entrance, and the incidents which may oblige you to enter it, we shall proceed to explain all that relates to the N.W. or principal channel.

14th. N.W. Channel.—All the just fear caused by this harbour may be avoided, by not coming-to with a fresh or strong North; or by securing your vessel well, or mooring

her well, before you wait to hand your sails.* The Inner Shoals do not much affect vessels that do not draw more than 16 feet of water; for the only dangers which are in the channel, to those of greater draught, are the *Outer* and *Inner Laxas*, (*i. e.* flat stones, like flags or pavement stones). The extensive shoals of the Gallega and Galleguilla on the eastern side of the entrance, and the reef of Gorda Point on the west, (which lie a league asunder,) form the mouth called that of the Outer Channel, while *Point Soldado* upon the Gallega, on the east, and the *Reef of Caleta* on the west, form the mouth of the Inner Channel: the two latter are visible, particularly when there is any wind to raise the breakers. You may safely pass at a cable's length from them; and, if there is no sea or swell on, when the water is high, and hides the rocks which terminate or bound the outer edge of the Gallega and Galleguilla shoals, with a kind of visible cordon or border, a moderate degree of vigilance will enable you to know them with facility, by the colour of the water, as they can never have over them more than 3 feet in the morning in the summer, and in the afternoon during the winter, which is the order most generally remarked in the irregular rise that the sea takes at this place. At night, they are most dangerous, if high water, darkness, and little wind, so that the sea does not break, all concur.

15th. If, in consequence of an error in reckoning, you should have proceeded too far to the west, as to Antigua Bay, the coast itself, or low land, will indicate that you should run along it to the S.E. or E.S.E. toward the harbour, which will show itself a-head; but you must not go into less than 9 fathoms abreast of the Points Brava and Gorda, the reefs of which show themselves by breaking with all winds; and if, on this passage, it happens at day-light, or in the morning, that the land-breeze is from South to S.E., you must continue on the starboard tack all you possibly can, so that, when the breeze enters, you may be to the north of the harbour; and observe, also, to lose no time, by following something to the east, to the end that you may take the harbour when the wind comes more to the N.E.; when making for it you may fetch the anchorage on one tack, thus freeing yourself from the necessity of having to anchor outside, and of having to warp in.

16th. Again, if day breaks when you are to the North or N.N.E. of the city, and in sight of it, with the wind from the land, you must not pass to the west of the meridian of the port, nor of the first mark for entering; for if the breeze takes to the S.E., and no land-breeze comes on, or if the breeze is very light, it may cost days to gain it; for with such winds from the eastward, the waters draw with force to the N.W. It will be well if, by day, you keep some object in view, by the bearings of which you may know how the current operates; and at night you may ascertain your place either by the *deep-sea* or *hand lead*.

17th. *Being to the eastward of the port*, and seeing the city and castle, as well as the Anegado de adentro, Blanquilla Isle, &c., with the wind from the east, which, as we have said, (paragraph 7th,) may be scant from the Soldado Point of the Gallega to within; you must *direct your course* according as the wind may be more or less free, so as to pass the high tower of the castle to the south, on which course you will leave the N.W. part of the Gallega; and seeing it as well as distinguishing the two towers of St. Francisco and the cathedral in the city,† you will follow or keep away until you bring them in a line at S. ¾ E. [*South*], or very nearly so; but you must be cautious on approaching the Gallega and Galleguilla shoals. This direction of the towers of the two churches is the first mark given in the plan of the port; but if you are to the west of this line hauled by the wind, on the larboard tack, it will be sufficient to get on it, and afterwards follow it; thus entering, as already directed.

18th. Being to the west of these shoals, in 25 or 30 fathoms of water, with the two towers in one, and also seeing the tower of the cathedral to the S.E. of that of St. Francisco, if the wind should be from E.N.E. or E. by N. (as said in paragraph 7,) you will

* Promptitude in doing every thing in coming into this port, with any vessel, is of the greatest importance; as this harbour may be considered as one of the most dangerous known. If, in entering, you have time, after getting ready cables, anchors, &c. to get out your boats, do so; keeping the capstans clear, and every thing ready for the necessary manœuvres in coming-to.

† These towers have been already noticed, see page 164. Don Bernardo says, They are the farthest west; that of San Francisco is a complete tower; the other is not, for it has neither the third story nor spire, and it terminates in a square. The little tower and cupola of the Hermitage of Pastora, which is farther to the west than these two towers, cannot cause any mistake, as it is so small.

run

run for the entrance by the first mark, diminishing the depth to about 6 and 5 fathoms, on good holding ground, until the salient angle of the battery of St. Crispin, or the S.E. angle of the castle, opens beyond the equally salient one of St. Pedro, which is on the N.W. (second leading mark of the plan,) or, what comes to the same, opening the whole of Sacrificios Island to the S.E. of the castle; you will then direct the ship's head to Point Hornos, and successively as you run in to Point Mocambo,* or to Sacrificios Island; on which direction, having passed between the Caleta Reef and the Soldado Point, and luffing up or keeping away, as may be necessary to keep in the channel, you will go into the harbour clear of the Outer Laxa, which is the most dangerous,† and also of the Inner one, ‡ running close to their buoys or marks, if placed, until the angle of St. Pedro's Bastion bears nearly E.N.E.; when you will luff up to let go the larboard anchor, which ought to lie out to the N.W., and you ought to occupy the first place; or, if you pass on to another, you must run in and let go your anchor where the pilot directs, and where you must bring-to, or act according to circumstances. You ought to have every thing ready for anchoring; because, when once off the breast-work of the castle, you should drop the anchor instantaneously; for, if you do not, the least risque is that you will have to weigh the anchor, and carry it out again, which you cannot always do, as you may wish.

19. Preventions.—When the anchor is gone in its place, and the wind is from E.N.E., or thereabout, you must carry out to the S.E. a warp of at least two stream-cables, to get the vessel immediately into the place she ought to occupy; and, passing the warp aft,§ with no little trouble, as both wind and current will be against you, haul on it to make the turn, (by hauling the vessel stern round,) when you must carry out the stern-fast, and receive on the starboard side the bend of a cable, which is kept ready; and, if you do not get this assistance, you must send a stream-cable (or hawser) to be made fast to the ring, to haul close in, and which, serving for a guy, the launch can carry ends or fasts ashore after the vessel is hauled close in.

20th. If, on account of the scantness of the wind, the anchor is not let go in its proper place, the warp ought to be longer; or you should prepare another, by hauling on which, when the cable weighs the anchor, you will return to anchor where you ought, and pursue the rest of the necessary duty of the ship.

21st. If the winds be from N.E. to North, or north-westerly, it is adviseable, if possible, to have on board the hawser, which is made fast to the ring, or to the end or bight of the cable prepared in it, to haul in by, before you do any thing with the cable; in this case, as it requires that the current should be running in, it will cost little or no trouble to make the turn, and you may even carry out the sternfast without a warp.

22d. It is necessary to be especially careful with the N.W. anchor, when anchoring with the wind from E.N.E. to E.S.E., because, as you must let it go on bearings opposite to the vessel, when in her place, the least error that may happen will be that of letting it go with the arms towards the ship, when it would not turn itself until the vessel came to hang by it in some North: this, however, is a thing which ought instantly to be attended to; and, if it is let go wrong, it will cost but little trouble to weigh it, and let it go again clear and right. This same anchor will be better let go with the bill downwards than with the stock, || for you can not do any thing without the cable to the north-eastward, which may be replaced from the castle, or the vessel; but the N.W. cannot be replaced from either, and, if it fails, a tragical catastrophe may ensue.

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* They are the two which are seen to the S.E. of the city.

† It has 18 feet on it at low water: it is at the inner part of Soldado Point. Its first mark is, the flag-staff of the castle on with the second merlon, or wall between the embrasures or gun-ports, near the angle of the visible shoulder of the bastion of St. Pedro: and the thwart mark is the first two poles, which are seen on the larboard hand, upon the Gallega shoal, in one.

‡ This has 24 feet of water upon it: it is almost in the channel, near the salient angle of San Pedro's Bastion. Its mark is, the said angle of the shoulder on with a small turret, which is upon the parapet, and fifth merlon of the contiguous curtain that looks to the N.W.; and the second or thwart mark is, the two second poles, which stand also on the same shoal, in one.

§ This is to be understood of having to haul into a place, with a cable to the ring, or an anchor on the shoal, and moored with 3 fathoms; but, if you have to anchor upon the turn, you may lay it out to the east as far as suits you, after having let go the N.W. one in its place, or the contrary way.

|| The commodore's, or of whoever occupies the first rings or place, ought certainly to be so, for the stock might catch the edge of the Inner Laxa.

23d. After what has been said in regard to the winds, it is obvious, if you are bound to this harbour, that you ought to have four anchors ready, with your best cables bent to them, and ought *never to think, when in it,* that *you are not in the season of the Norths;* for, as has been said, they sometimes come on so quick, and blow with such fury, out of their proper season, that they do not give vessels, at sea, time to furl their sails; and, in harbour, they render it in a moment impossible to get on board, and much more to get any assistance, unless it is given from the walls of the castle, between the two bastions, which you cannot always reckon on being done with the requisite promptitude; or it may be impossible, on account of the vessel's distance from the wall, or of other ships intervening; and, if the N.W. cable should fail, there is no remedy.

24th. From these reasons, every mariner, who is acquainted with the want of shelter in this place, and how confined or narrow it is, can infer how very dangerous it must be for any line of battle ship, or other large vessel, which, in the season of the Norths, anchors at night-fall within sight of the city*, or afterwards in sight of the light in the lighthouse, and also in the mouth of the interior channel, that is, as far advanced as Point Soldado; as it happens that, when the breezes take to the S.E., that they cannot run in to secure themselves (as expressed in the paragraphs from 19 to 21,) and thus, whenever they have to anchor here, they ought directly to prepare the warp, and the moment the breeze will permit, to commence warping, without waiting or hoping for any thing; for, whether there have been appearances of a *North* or not, it may come on; as, when you least expect it, it comes suddenly, and never more fiercely than in the serenest night and clearest sky.

25th. If you anchor on a sight of Vera-Cruz, or of the lighthouse, or outside of these situations, on account of a calm, on the coast of Chacalacas, Juan Angel, &c. in from 50 to 20 fathoms, on good holding ground, you ought to reef, and merely stop the topsails; and ought to be most attentive to heave up at the least breadth of wind, or cloud coming from the north, which ought to warn you; or to cut, if it comes suddenly, that you may manœuvre or work ship as you ought, in consequence of its force, according to the place in which you are, the size of the vessel, and other circumstances, be it either to haul to the east, with all possible sail, which is the most adviseable, in order to repass the Anegada de fuera, or Outer Anegadilla, from which arises the greatest risque; or, *to* keep upon *boards* until day-light, and then to run for the harbour; or, to run for the harbour under sail proportioned to the distance and hour: but these last two determinations ought only to be taken, in case you should be so entangled that you cannot repass the Anegado de adentro; and the second, in case of being in want of provisions, or having sustained damage, &c. &c. You ought always to keep in mind the risque there is, particularly with a large vessel, in coming into the harbour with much wind; for it blows harder *in it* than *outside;* and it is to be considered that casualties may disconcert the best-taken measures for anchoring in such critical circumstances, as much wind, sea, current, narrowness of anchorage, the quantity of anchors scattered over it, the vessels in it, and the want of assistance. On these occasions, too, you may be prevented from working freely, by finding vessels whose anchors and cables do not hold them, or getting athwart others, so as to drive upon the reefs at Hornos Point, or in the Lavandera Shoal, and lose some of the lives.

26th. Those who do not apparently expose themselves to be thus entangled, yet sometimes are so; as happens to those who, sighting Vera-Cruz at the dawn of day, follow towards the harbour, persuaded that the breeze will blow, which is not always the case; for though it blows something regularly, it rounds to the land from west to south, when it announces good weather; and, if bad, from north to west: it may also become calm; and, therefore, as both in the first and last of these cases, it is impossible to enter the port, they consequently remain outside and exposed.

27th. Knowing this, and that, even if the land-breeze comes, there is no certainty of its continuing, so as to enable you to repass the Gallega and Galleguilla, and to clear the mouth of the harbour; it is necessary that, at the setting of the sun, when the manœuvres made can be seen from the lookout, or before that time, according to the season, appearance of the weather, distance from Vera-Cruz, or from its shoals, and the number of vessels which may be in it, the successive navigation should be resolved on;

* To be on clear bottom, you must take care that it bears nothing to the west of south; for, more to the eastward, there are spots of good and bad ground.

and,

and, in case there is the least doubt of catching the port before dark, if in the time of the Norths, it will be best to haul out on the starboard tack, until you consider yourself 7 or 8 leagues to the N.N.W. or N.E. of it: here you will be in a proper situation for receiving a North, if it comes on by night; and, if not, to work early in the morning, so as to see the castle, city, &c.; but if you have not a large vessel, and if it be not in the season of the Norths, this precaution admits of some modification.

28th. From the preceding remarks, it may be inferred how far from proper it is to enter this harbour by night, especially with ships of the line, or others approaching to their draught of water. Some have entered, and others may enter, successfully; but if any one, on any circumstance apparently favourable, attempts this entry, he may find the occurrence but momentary, and disagreeable consequences may ensue.

29th. Notwithstanding what has been said relative to the winds, if, in the good season, there can be any confidence in them, it may be expected in the months of May, June, July, and even in August; in which, if you wish to make for the harbour, at most, with a large vessel, when towards the vicinity of the inner channel, the following instructions must be observed: If the wind is favourable, and if not, according to the greater or less distance you may be from the harbour when a contrary wind or calm ensues, you will anchor or not, reckoning that every possible assistance will be given you; and that you will have a pilot off so soon as in his power, upon your firing two guns *precipitately*, as an indication both of your intention to enter, and of your being in want of a pilot: the castle will answer you with two guns fired *deliberately*, both to indicate to you that you are understood, and that you shall have the desired help. At the second shot you may fix the bearings, if you had not got them before.

30th. Night then coming on, when you are in sight of Vera-Cruz, and of its lights, and to the eastward of the harbour, and at one, two, or three, miles to the northward of Anegada de adentro, or of Blanquilla Island, or of the Galleguilla, you must steer so as to run for, and to open, the mouth of the harbour about W.N.W., until the light bears S. by W. ¼ W.; from thence steer West until it bears S. ¼ E., and afterwards S.W. until it bears S. by E. ¼ E. when you will steer S. ¼ E., being now included, or nearly so, in the first leading-mark of the plan, and in the Outer Channel, diminishing the depths to nearly 5 fathoms; and, when the light remains at S.E. by E., you will be in the place where it is usual to take a pilot. If you have to conduct a vessel of war, or one of great draught of water, and determine not to enter, you will anchor to wait for day-light. If your vessel is of middling size, and you have no pilot to direct your entering, but wish to go in, you must steer S.E. ¼ S., for the purpose of passing the Outer Laxa, until the light bears E. ¼ S., when you will run in E.S.E. ¼ E., going clear of the N.W. buoys, to work afterwards, as is directed in from paragraphs 18 to 21, or, seaman-like, according to circumstances.

31st. If night comes on when you are to the N.N.W. of the light, you must steer so as to get it S. by E. ¼ E.; and from thence you must steer S. ¼ E., being included in the first leading-mark of the plan, and successively, as has just been stated in the preceding paragraph.

Finally. *If caught by night to the N.W. by N.* of the light, which will be near to the shore, you must steer to the East, to keep clear of Points Brava and Gorda; and, having passed the last, place the ship's head to the S.E., or towards the light itself, until you find from 6 to 5 fathoms, when you must steer S.S.E. ¼ E., until the light bears E. ¼ S., when you may steer E.S.E. ¼ E., for the interior of the harbour; but, if you have to conduct a vessel drawing less than 16 feet of water, having once passed Point Gorda, you may continue the course of S.E. ¼ S. without danger from Point Soldado, or from the outer Laxa, over which, in such a case, you may pass.

PASSAGE from VERA-CRUZ to HAVANNA, *in the* MONTH *of* APRIL. (*Lieut. Jn. Evans.*)

On the 10th of April, 1828, at one *p. m.* we sailed from Vera-Cruz with a light S.E. wind. 11th, Wind light, S.E. At noon in lat. 20° 47′ N., long. 94° 11′ W. 12th, Wind fresh, S.E. by E.; lat. 22° 28′, long. 94° 11′. 13th, Wind fresh, S.E.: variable, came round to E.N.E. light and hazy. Lat. 23° 22′, long. 93° 14′. 14th, Clear weather, wind light, varying from North to E.N.E. The water, since we left Vera-Cruz, has been

been one degree colder than the air, until this day, when it was two degrees warmer. Wind during the night inclining to the S.E.; lat. 23° 11′, long. 92° 22′. 15th, Moderate and cloudy, wind E.S.E.; lat. 24° 20′, long. 91° 41′. 16th, Moderate E.S.E. wind; white haze along the horizon; wind freshening at S.E. We passed to-day, at a few miles to the N.W. of a spot laid down as having 40 fathoms over it. At 2 *p. m.* saw a large flock of gulls, hovering near the surface to the eastward, which I think verifies its position, having seen but one solitary gull before this. Passed a quantity of small bluish-green medusæ, floating in parallel lines North and South. At 6 *p. m.*, wind S.S.E., passed a log tree, covered with barnacles, lat. 26° 6′, long. 90° 51′.

17th, After midnight last, dark and gloomy weather, with continued lightning, thunder, and rain; a calm succeeded. In the morning, wind fresh at S.S.E. *Fucus Natans*, in parallel lines, S S.E. and N.N.W.:* noon, thick hazy weather; gale at S.E. by S.; no sun. Lat. *d. r.* 26° 52′, long. 89° 17′. 18th, Fresh breeze, S.E. by S., going 7 knots on a bowline; lat. 27° 40′, long. 87° 50′: after 4 *p. m.* wind light; weather hazy; lightning with squalls during the night. 19th, Hazy, scud flying fast from the southward. 11 *a. m.* heavy squalls, with rain, hail, thunder, and vivid lightning; wind shifted from South to W.S.W., and became light: noon, lat. *d. r.* 27° 46′, long. 85° 57′. In the afternoon, wind N.W. by W. light; many land birds. 20th, Beautiful day, wind N.W. by N. gentle as the Trade. Water rather lighter in colour. Passed the stem of a large tree, quite rotten, lat. 26° 0′, long. 84° 39′ by ☽ ⊙ 84° 5′. At 2 *p. m.*, colour of the water changed suddenly to blue-green, on a spit of the Tortugas Bank, or on a detached bank, did not sound. 6 h. 30 m. *p. m.* sounded in 40 fathoms, white sand; wind inclining to the northward, beautifully clear moon-light. At 1 *a. m.* sounded in 40 fathoms; passed to the westward of the Dry Tortugas Kays without seeing the lights. At 4 *a. m.* sounded in 45 fathoms sand and shells. By amplitude, variation 9° E.

21st, Fine clear day; light North wind: noon, lat. 24° 20′. Lunar worked on long. 83° 33′. Temperature of air, 70°; water, 75°, quite warm to the hand, which indicated our being in the Florida-stream. In the evening, water still 5° warmer than the air. By morning amplitude, variation 8° 5′ E. The water, until 3 *p. m.*, continued to indicate, by its green colour, that we were on soundings: in the evening it changed to an intense blue; clear star light night, wind N.E., hauled up on a bowline gradually from the morning. 22nd, at 6 *a. m.* Havanna bore S. by E. 4 leagues; at 9 anchored.

Note. It will be seen that, on the 20th, the water changed colour at 2 *p. m.*, at noon our latitude was 26° 0′, and the lunar 84° 5′ W. Until 2 *p. m.* we ran S.E. ¼ S., 7 miles, which is a S.E. by S. course good. (¾ pt. var.) Our position at that time would therefore be 25° 54′, and 84° 0′. At half-past 6, *p. m.*, we sounded in 40 fathoms white sand; we then ran S.E. ¼ S., 16 miles, which is S.E. by S. ¼ S. good; giving our position, at that time, 25° 40′ N., and 83° 50′ W. I understand that there are lights on the Dry Tortugas; we did not however see them. After rounding these kays and standing a short time to the southward, you experience (in April) the regular trade wind from N.E. to E.N.E. It will be prudent, if bound to Havanna, to haul up S.E. or as high as the wind admits, (westward of that point,) and the following morning you will be off the Morro. Havanna may be known at a distance by the "*Maiden Paps*," two round hummocks on the ridge of land aback, and by the Table land of *Mariel* to leeward, as described in the Sailing Directory for the Coast.

*** Masters of vessels, from Vera-Cruz, &c. to Havanna, often lengthen their voyage by keeping away too much to the southward after rounding the Dry Tortugas; fearful of being carried away to the eastward of Havanna by the strength of the Florida Stream! some have fetched in about the Port of Honda, the Cock's Combs, and one vessel even as low as Cape Antonio!

3.—VERA-CRUZ TO THE BAY OF ST. BERNARDO.

FROM the harbour of Vera-Cruz, the coast trends nearly N.W. by W. 11 miles, to the River Antigua; thence forming something of a bend, it extends to the N.N.W. to

* On this day, the *fucus natans*, or gulf-weed, seen in parallel lines, was found to be in flower, and completely coloured with young barnacles. From the latitude 25° to 28°, in this sea, we met with the fucus, as described. On the passage little or no current was perceptible.

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the point and river of Chacalacas, and forms also a bay named that of *Antigua;* from Chacalacas, it follows the same direction of N.N.W., 6 miles, to Zempoala Point, forming also a bight to the west between the two points. From Zempoala the coast sweeps to the N.W., forming a regular bay, with Point Bernal, which lies N.N.W. 10 miles from Zempoala Point.

To the S.E. of Bernal Point, and at the distance of about half a mile, there is an islet, named *Bernal-chico,* which, as well as the shore of the bay, is very clean; and you may pass between it and the point, without fear, in 5 or 6 fathoms of water. On the south of it there is shelter from northerly and westerly winds; but none from winds to the eastward of north. To anchor in this bay there is no need for any other guide but the lead, and, at half a mile from the beach, there is 5 fathoms of water.

Off the coast, between Zempoala and Bernal, there is a shoal, which breaks: this shoal bears nearly North from Point Zempoala, at the distance of 4 miles, and at the same distance athwart from the coast: it is necessary to beware of it, especially at night. With a large vessel you should always pass outside of it; for between it and the coast there is a spit, which runs off from the shore, with only 4 fathoms depth upon it.

From Bernal Point the coast trends *North (true)* 4 miles, to Mariandrea Point; from thence N.N.W., by compass, 10 miles to Point Delgada, from which it follows N. 58° W. [*N. 50° W.*] 25 leagues, to the *River Tuspan;* from the River Tuspan, it continues nearly N.N.W. 18 miles to the Bar of *Tangujo;* from thence northerly, bending to *Cape Roxo,* 9 leagues; and from that to the *River Tampico,* nearly N.W., 17 leagues. The coast comprehended between Tangujo and Tampico, and which is that which forms Cape Roxo, is no more than a narrow tongue of land, which separates the Lagoon or Lake of Tamiagua from the sea.

Between Cape Roxo and the River Tuspan there are various shoals and islets, which lie out at a distance from the coast, and form excellent roadsteads, in which vessels may be sheltered during the Norths. The first to the southward is the shoal of Tuspan, which is about 10 miles to the E.N.E. of the river of the same name: upon this shoal is a groupe of islets, and on the S.W. part of it is good anchorage is 8 or 10 fathoms of water, on coarse sand, which is found at two cables' length from its edge. About *N.W.* (true) from this shoal, and at the distance of 5 miles, lies the shoal named *Baja del Medio,* or Middle Shoal, which is 7 miles distant from the coast. This shoal is much smaller than the former; but it also affords anchorage on the S W. part, in 6, 8, or 10, fathoms on sand. To the N.W. of this shoal, and at the distance of 2¼ miles, is that named *Tangujo Shoal,* at the S.W. part of which there is also a better anchorage than at the other two. The channels formed by these shoals are clear and deep, and between them and the coast there is no object of danger which is not visible.

Off Cape Roxo are the isles and reefs of *Blanquilla* and *Lobos;* the first, which is a reef, with a cluster of islets on it, lies to the east of the Cape, and about 5 miles from it; to the S E. of it, and at the distance of 6 miles, is the islet Lobos, from the north part of which a great rocky shoal stretches out, which leaves only a strait of 3 miles between it and Blanquilla; there is also a shoal in the middle of this strait, so that much caution is required in passing through it. To the S.W. of these islets there is excellent anchorage, sheltered from the Norths; and, to take it, there is no necessity for particular instructions.

All the coast, generally, from Vera-Cruz to Tampico, is clear and deep, and without any other dangers than the spits, *(restingas,)* which stretch out from Juan Angel, in the Bay of Bernal, and at Point Gorda; and, along the whole of it, the soundings extend from shore from 8 to 10 leagues, and the water so shoalens, that, at two miles from the shore, you will find from 5 to 7 fathoms. The land is not very high, and almost all terminates in a sandy beach: it is covered with brambles and small trees, which are very thick upon it, and look green at a considerable distance. There are no particular marks to distinguish the land by; and observations for the latitude are, therefore, especially required here.

TAMPICO.—The River Tampico is considerable, and has commonly a depth for any vessel which draws less than 2 fathoms. Its bar stretches nearly N.W. and S.E., and the depth over it is more or less, according to the floods of the river.

The entrance, between the two outer points, is one quarter of a mile is breadth, and the river within widens to half a mile. At a short distance within the bar the depth in-

increases to 4 fathoms, and thus continues upward for 4½ miles: the best water being toward the south shore. The new town of *Tamaulipas* is on the north bank, at 6 miles S.W. from the bar, and there is anchorage off it, in 2½ and 3 fathoms; but to the eastward of it, from the elbow or bend of the river, is a spit of sand and mud, extending more than half-way over. Opposite to this point, on the south side, is a shoal inlet or creek, communicating with the *Laguna de Tampico*, an extensive lake, on the eastern shore of which stands the *Old Town*, or *Pueblo Viejo de Tampico*.

From the new town of Tamaulipas the Rio Panuco extends W.N.W., W.S.W., and S.W., to the small town of that name, which is 10 leagues up from the entrance.*

Directions for Tampico Bar, by Rear-Admiral Mackellar. (1817).

"The Bar is situated in latitude 22° 15′ 56″, and longitude 97° 50′ 18″. Variation 8° 25′ E. As all the land around this has nearly the same appearance, it is rather difficult for a stranger to find out the entrance of the river: on that account I should recommend proceeding in the following manner:

"Ships coming from the eastward, and having got soundings in 60 fathoms, ought immediately to get into the latitude of 22° 16′, or 22° 18′, and from that make a west course: If the latitude can be ascertained, this is the most certain method of making a good land fall; but, in the event of your not being able to get your latitude, and making the land to the northward or southward of the river, it may be known thus: In the latitude of 22° there is a range of small hills, not higher than large houses; this land is about 5 or 6 leagues S. by E. from the bar. In latitude 22° 9′, and apparently 4 miles in shore, on the fall of a cliff, stands the town of Tampico; it may be seen from sea, and is the only town on this part of the coast: in the south end of it there are two long white houses, like barracks; the rest of it appears in scattered houses. From off this town to the anchorage off the bar, is about North, 7 miles. The entrance of the river cannot be made out more than 4 or 5 miles off, as there is nothing to point it out more than three or four small huts on the south side of the entrance. To the north of the river, in latitude 22° 23′, and 3 or 4 miles in shore, there is a small flat hill: this hill appears, when you are 6 or 7 miles off, in the shape of a flat boat, bottom upward; between this and the entrance of the river the white sand covers the tops of the small hillocks along shore, having the appearance of sand-hills, rather than of a sandy beach: these are the only objects that can be pointed out to be of any assistance to a stranger in making the land.

"Having made the river out, and intending to anchor, bring the entrance of it to bear S.W. or S.W. by W., and run in, on that bearing, until you are in 7 or 8 fathoms, and then anchor; your distance from the shore will be about 3 miles; the bottom is very good and clear, being fine soft mud, and holds well to the northward of the river, with plenty of room to get under way should it come to blow; but this anchorage is not in the least sheltered from either wind or sea; and, during the winter months of the year, that is, from November to the middle of April, when the north gales prevail with such violence that it is impossible for any ship to remain at her anchors, and in the event of the wind's coming to the eastward of north, you cannot carry sail to clear the land; therefore particular attention ought to be paid to the appearance of the weather; and, so soon as there is the least sign of its blowing, get under way, and make sail to the N.E., until you are off soundings: then bring-to for a change of weather. These gales, in general, blow from N.W. by N. to N. by W.; and I never have seen them to the eastward of north.

"The entrance of this river is, I think, the most dangerous I have ever seen. The general depth of water on the bar is from 8 to 14 feet, and the strong run of the river, coming out and meeting the surf, makes one continual sheet of broken water; the bar being composed of quick-sand, which shifts with every gale of wind: and, even in a fine

* On the Bar of Tampico, which is very dangerous in blowing weather, many vessels have been lost, and Mr. Poinsett, in his "Notes on Mexico," 1822, mentions a vessel which, in the month of December, had been on the coast fifteen days without being able to approach the land, from continued N.W. gales. The Old Town he describes as a city of "thatched cottages," but in which a retailer, in a miserable little room, with two barrels stuck up on a dirt floor, and a board laid over them for a counter, will sometimes sell 500 dollars' worth of goods in a day, as the people flock to this market from many miles around, and especially from the neighbourhood of Panuco.

day,

day, and smooth water out at the anchorage, the bar has a very alarming appearance to a stranger: it is attended with much greater danger on coming out in a boat than on going in; and coming out with the wind blowing in ought to be well considered before you attempt it; for, should you be prevented from putting out by the heavy sea and wind, you will find great difficulty in getting back against the stream of the river, and winding of your boat, which is attended with greater danger than all the rest. Within the river there is from 3 to 5 fathoms of water, and it is about three-quarters of a mile broad; it is navigable about 30 leagues from its entrance. About 5½ miles up is the village of Tampico; it stands over the south side of the harbour, or rather on the side of a lake; boats can go only within half a mile of it."

On the 10th of Sept., 1829, a severe hurricane began to rage, which uprooted the largest trees, demolished many houses, and caused the most terrible devastation: half the town, *Pueblo Viejo*, was destroyed, and a brig, the *Caroline*, foundered, with all her cargo.

A Voyager, who visited Tampico in February, 1832, says of this place, We had not been long at anchor (without the bar) before the pilot appeared in his launch, with twelve or fourteen oarsmen, of all complexions, from the real jet to a pale straw. This pilot was half Indian, half European, very corpulent, and rather taciturn. He quaffed a tumbler of Barclay's best, and then favoured us with a proof of his proficiency in his profession. We soon crossed the bar, and again anchored, when we were visited by the captain of the port, whose duty it is to obtain the name of the vessel, her cargo, consignee, &c. It appears that he never fails to ask whether the captain has brought any hams or porter for sale, and generally obtains some in the shape of a present, which is graciously accepted. Two officers of the customs then made their appearance, and commenced a strict search for contraband goods, and demanded the letters, which must be delivered under a heavy fine for any retention. You pay 3*s.* 6*d.* postage on a single letter by packet, but, before you get it out of the hands of these men, the charge is increased to 4*s.* 6*d.*

We were detained here until our passports were examined, which was not before ten o'clock the same day, and happy were we to be released;—not a soul of us had slept; the sailors wrapt themselves up in the spare sails, some went to roost in the tops, others in the boat, &c., but none could enjoy the honey-dew of slumber. The night was serene; and unfortunately there was neither wind nor rain to drive away our tormentors, the mosquitos and sand-flies. I would recommend to every one visiting this spot to come provided with a mosquito bar, or curtain, which could be procured in England for half a dozen shillings.

When the sea-breeze set in we got under way and soon reached the town, which is about six or seven miles from the sea. There is nothing very remarkable in the River Panuco;—it is a fine broad stream, but always brackish during the dry season, and well stocked with turtle and alligators; the country on either side is low, and swampy in many places, and, in the rainy period of the year, the borders of the river are entirely inundated, and of course impassable.

The perpetual verdure which adorns the banks of the river, extends as far as the eye can reach; but the enjoyment of it is allayed by mud, sand, insects, and heat. The town is a lovely spot; it has a custom-house of course, and a place of worship; one *Fonda*, or tavern, where the merchants and their clerks congregate in the evening for an hour or two only, as it is the custom to retire before nine or ten, and to rise before five, o'clock.

The town [*Puebla Nuevo de las Tamaulipas*] was commenced about six years ago, and there is nothing prepossessing in its appearance; the houses are constructed chiefly of canes and mud, roofed with the palm-leaf; and the streets, not being paved, are disagreeably *soft* in the rainy season. The northerly *breezes*, also, with clouds of dust, come with such impetuosity, that you would imagine the wind would "blow the earth into the sea." There are several foreign mercantile establishments here, and their proprietors have tolerably comfortable dwellings, built of stone.

The more respectable class of the inhabitants are polite and affable, and in their general manners very much resemble the Spaniards.

From the Bar of Tampico the coast trends to the N.N.W. towards Ciega Bar, which is 6 leagues from it. The coast is clear, and with good depth for 12 miles, when you begin to find pointed rocks in the bottom, but which do not run out above two miles from the shore. From Tampico Bar to the north you will find no more high land on the shores than the rising grounds, *(medanos,)* which extend to Point Ilicacos, and a double hill inland, which is named *Matanzas*; from which, in the interior, the mountain range extends to the N.W.

Ciega (i. e. *Blind*) *Bar* has only 3 feet of water on it; and within it there is a shallow lagoon, which communicates with that of Altamira. True West from Ciega Bar is the hill of *Metaté*, which is inhabited by wild Indians. From Ciega Bar to that of *Trinidad*, the coast trends nearly N.N.E. for two leagues: in its proximities the bottom is rocky, like the preceding: the bar of Trinidad has only two feet on it at low water. From Trinidad Bar to *Barra del Tordo*, or *Tordo Bar*, is 12 miles N. by W., and all good depth, with the exception of some pointed rocks, which also do not lie farther out than two miles. On Tordo Bar there is only 4 feet of water at low sea, and within it are various shallow lagoons: all this coast is bordered with low hills, or hillocks; and two leagues inland from these there are some which rise a little, and are named the Commandant's. To the northward, near the parallel of 23°, are three double hills, seen when near the coast, which are named *Cerros los Martinez*, or Martinez's Hills, which serve as land-marks to those bound to Tordo; for the southern part is nearly West from the bar: farther inland than these hills are seen the *Sierras*, or *Mountains, of Tamaolimpia*, which trend to the N.W., and which serve as a haunt for the wild Indians.

From the Bar of Tordo, northward, the lagoons become more numerous; they are all of salt water, and fresh water is to be found only in hollows between the hummocks, where it has remained after rain.

From the Bar of Tordo to the River Marina, or Bar of Santander, the coast trends nearly N. by W. 18 leagues, and is all of a good depth until within three leagues of the bar, when various pointed rocks are met with, which lie out about two miles from the beach: six leagues to the North of the Bar of Tordo, is a place named *Ostional*, by which the Lagoon of Morales communicates with the sea whenever it is a little risen: in this lagoon there is abundance of fish, and there is a watering-place in front of Ostional. The Lagoon of Morales communicates with the River Marina.

The Bar of the River Marina has 7 feet of water, and the *Hills of Palma* and Carrizo, between which lies the neck of the river, serve as marks for it; before this the river forms a great lake, of which the shores are low. Six leagues up the river is the town of Soto la Marina, which is 10 leagues distant from the colony of New Santander, at which all necessary provisions may be found. The lake, which is within the bar, and below the neck of the river, is full of shallows, and has solely a channel of 12 or 14 feet of water; but in the river there are 3 and 4 fathoms. All the coast here consists of very low sandy beaches, and on no part of it is there fresh water to be found; but it may be obtained in the interior country.

From the Bar of Santander, the coast, which is very low and of sand, trends 25 leagues N. by E. to the *Bocas Cerradas*, which are four, within the distance of a league: by these the sea enters when there are storms; and they may be distinguished at 3 or 4 leagues off at sea: they communicate with the *Madre Lagoon*, which thence extends to the river *San Fernando* or *Tigre*. At 8 leagues to the north of the River Marina, the interior high land ends, and thence the land continues low. The lagoons, in many parts, form a horizon. From the Bocas Cerradas to the river of San Fernando or Tigre, the coast bends to the N.N.E., and continues of the same description as that last described.

The Bar of San Fernando has 3 feet on it at low water: the water of this river is salt, owing to the communication it has with the lakes or lagoons, and fresh water is to be found only at the time of the rains: but, on the south coast of its bay there is a pool of standing water, at which any urgent necessity may be supplied. From this bar the coast follows to the N.N.E., for 14 miles, and afterwards North for 16 miles; and then about 2 leagues before arriving at the River *Bravo del Norte*, it directs itself to the N.N.W.

RIO BRAVO and El Refugio.—The Bar of the River Bravo is good and very straight; it extends East and West, and has 7 feet on it at low water: this river is of fresh water, and has a regular current the whole year, which is more or less strong according to

to the waters it receives: within the bar there are 3 and 4 fathoms. As all the land hereabout is equal and low, it offers no distinguishing marks, excepting a small lagoon, which extends from the Tigre to this river, and the bar of which stretches a league out to sea. At a greater distance, it may also be noticed, that the fresh water changes the colour of the sea; a thing unknown at any other bar of this coast. The town of EL REFUGIO is on the south bank, at about ten miles up the river.

FROM THE RIO BRAVO, the coast trends N.N.W. for 5 miles, where there is a shallow bar; thence N. by W. to the distance of 6 miles farther, and to another bar of 15 or 16 feet; but with very little shelter, having a very wide mouth, and the coast being very low; while the lagoon, with which it communicates, leaves merely a short space of about 4 fathoms in depth, where you may anchor in case of necessity; but all the rest of the lagoon forms a horizon, having only 2 and 3 feet of water to the main land, which is at a good distance. It is necessary to be much on your guard in this place, on account of the Indians, who come down to the sea-shore in periaguas or pirogues. On no part of this coast is there fresh water. To find this bar, which is called *Barra de Santiago*, you have no other guide than the latitude, and observing that, to the northward of it, the lagoon begins to get wider. The entrance of the bar is very near to the North point, and lies E.N.E. and W.S.W. to the anchorage of 4, or perhaps 5, fathoms, which is about a league in length. From this bar the coast follows to the true North, all very low and of sand, the main land being distant 5 or 6 leagues from the beach, forming a lagoon of 3 or 4 feet of water, with much clay. This lagoon begins to be still broader in latitude 27° 30′ N., where it is nearly 7 leagues in width. The embrochure of, or channel to, this lagoon, in the south, is by the Bar of Santiago; and, towards the north, by the *Pasa del Caballo;* and, when its waters are very high, they open various mouths, or passages, in the beach, which is of sand, and very low. From lat. 27° 30′, the coast continues nearly true North to lat. 28° 10′, or the shoal bar of the *Pasa Caballo:* to the N.W. of the latter is the Lake of St. Joseph, *(S. José,)* distant about 16 miles. From the latitude of 27° 30′, the lagoon narrows towards the Bay of San Bernardo. From Pasa del Caballo, the coast trends to the eastward of north, to the Bay of San Bernardo, and all of it is low, with sandy beaches; so that, with hard gales, the sea covers the little tongues, which serve as barriers to the lagoons, and unites entirely with them.

All the coast which we have described, from Tampico to the Bay of San Bernardo, is very clean, and 3 or 4 fathoms are found at a league from the shore. The quality of the bottom is, in general, either of coarse or fine sand, and in some places mud: on the bars of the rivers very fine sand is always found; but also, sometimes, sand and oaze. The greater part of the lagoons on this coast have not more than 3 or 4 feet of water, where deepest, and parts of them are dry, except in the season of the rains. In the season, from August to April, the navigation is very dangerous on these coasts, on account of the heavy sea which is on them, and which renders it impossible for a vessel to ride at her anchors; for, in that season, the E.S.E. winds blow with much force, before the wind comes to the North, for three days: but, in the other months, from April to August, the navigation is very good and secure, and currents are always found to the North and N.E., which facilitate an increase in the latitude; and, although the easterly winds, which prevail from April to June, raise much sea, yet you may, in a case of necessity, ride at anchor in 7 or 8 fathoms: but, if you can keep under sail, do so, in 7 or 8 fathoms, when you will be in sight of the coast. The land-breezes are frequent in the summer, from midnight till 9 or 10 in the morning, when the sea-breeze comes on: but this is only the case to the latitude of 26½°, which is where the mountain range ends; for all the rest of the land is very level, low, and swampy, or watery; and there are few showers on it, which are the causes of the land-wind.

4.—THE BAY OF SAN BERNARDO, AND COAST THENCE TO THE RIVER MISSISIPI, INCLUSIVE.

THE BAY OF SAN BERNARDO is in the N.W. corner of the Mexican Gulf or Sea; its entrance is formed, on the west, by the low land which trends up from the S.W.; and, on the east, by the west point of the *Isle* of *San Luis:* there is not more than 7 feet of water on the bar, which extends W.N.W. and E.S.E.: within the exterior points, there is a depth of 3 fathoms; but it so soon diminishes, that the bay may be generally considered as a lake of 3 or 4 feet in depth: from the bar there is a strong current to the

the S.W., when the tide ebbs; so that it is necessary to anchor and wait until the flood favours the entrance. The tide rises 5 feet. Before passing inward, it is necessary to mark or buoy the bar; for, as there is always a swell upon it, striking would be very dangerous.

All the land of this bay is low, and without trees. The island of San Luis, or St. Louis, follows E.N.E. nearly 15 miles; all very low and marshy, without wood; and the south coast is a very fine white sandy beach. This island is narrow, and the inner part of it, with the main land, forms a lagoon, of about two leagues in width, studded with kays, and so shallow that there is no passage through, except for canoes. The eastern extremity of San Luis' Island sends a spit out for two leagues to the E.N.E.; between which and a shelf, stretching out from the main land, is the entrance of *Galveston Bay*.

GALVESTON BAY, so named from the Viceroy, Don Bernardo de Galvez, in 1783, is properly a *gulf*, perfectly land-locked, as shown by chart, and bordered by shoal banks, of 6 feet and less water. The exterior point of this harbour to the south, is *Culebras Point*, the eastern point of the island of San Luis; and that to the north, on the main land, is *Point Arcokisas*. In order to enter this bay, it is requisite to round the reef at Culebras Point, and to go in by the channel which the north edge of that reef forms with the south edge of the shelf, stretching from the main land to about 4 miles to the south of it. This channel is a mile in width; and, at its entrance, has a bar of about 15 feet of water; and this, which is the greatest depth, will be found nearer the edge of the spit than that of the shelf. Within the bay, 5 and 6 fathoms are found. So soon as you are abreast of Culebras Point, within the channel, you must luff up to N.W. and N. by W., until the point of Arcokisas bears East, when you may anchor in 4 or 5 fathoms, on clayey sand. More to the north you will find 3 fathoms. This bay is good for the shelter it affords; but, although very large, its coasts have shallows to a long distance out, on which boats only can pass: in the northernmost part of the bay, and almost N. by W. from Arcokisas Point, and about 17 miles from it, is the mouth of the river Arcokisas, or Trinidad, the land at which is good and wooded: this is the only place in which fresh water can be procured in this bay, or even on the exterior coast, a long way to the eastward.*

This coast, which is that of the province of Texas or Tejas, has been described as generally low and marshy, with small isles, inclosing bays of more or less extent: the country, however, imperceptibly rises to the northward, and becomes dry, broken, and healthy.

The discordancy, in different representations of the coast, between Galveston Bay and the Sabine Lake, are rather extraordinary, owing to the want of a regular survey. In the late Spanish chart of the gulf, the difference of longitude between Galveston Bay and the mouth of the Sabine is 1° 14′, the latter being laid down in 94° 45′, while in the survey of Louisiana, by Mr. Darby, it is given in 93° 57′, and in the marine survey of Mr. Gauld, as in 93° 30′ only.

From the consideration that the interior land has been actually measured across the state of Louisiana, it can hardly be questionable that Mr. Darby's longitude is, at least, a near approximation; and we have, therefore, adopted in it our new Chart of the Gulf; but of the true figure of the coast, thence to Galveston Bay, we know very little; even after an examination of many charts, &c., several of which agree only in one common error, that which originated in the Spanish chart of 1799, and since copied into others of later date.† The *Derrotero de las Antillas* says that, between Galveston Bay and the Sabine, no fresh water is to be found.

RIVER SABINE.—The Sabine River has been described by Mr. Darby as follows:—

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* The time is, probably, not far distant, when Galveston Bay will become a harbour of some importance; although, at present, the country to the north appears to be occupied by the Indians of the *Coshattee* and *Bedi* tribes only. On the *Rio de Flores*, a river of Texas to the west, we already perceive the rudiments of civilization in the villages called *Austin's Town*, *S. Felipe*, &c.—Ed.

† For the delineation of the Rivers of Texas we are indebted to a manuscript map, communicated by an officer of rank, who traversed the country a few years ago. The document, though evidently imperfect, was very acceptable; as affording information on a country of which, previously, very little was known; and as, at least, presenting the general courses of the rivers falling through it, from the mountains, with the routes of the Indian traders. The latter were therein given as now shown on the *Map of the Mexican States*, published by Mr. Laurie.

follows:—"The Sabine River has obtained more attention from becoming the boundary of the United States and the Spanish internal provinces, and part of the permanent western limit of the State of Louisiana, than it would be entitled to claim from the magnitude of its column, or the fertility of its shores. The depth of water at the mouth of the Sabine is not more than four feet on the bar, at ordinary tides. The mouth of the river is wider than could be expected from the quantity of water which it discharges into the Gulf of Mexico.

"No prospect can be more awfully solitary than that from the mouth of the Sabine. A few trunks of trees thrown on shore by the surf of the sea, and scattered clumps of myrtle, are the only objects that arrest the eye from the boundless expanse of the gulf, and the equally unlimited waste of prairie.* No habitation of man appears in view to cheer the voyager. No herds, grazing on the green plain, recall his domestic sensations. The deep solemn break of the surge, the scream of the sea-fowl, the wind sighing mournfully through the myrtle, and a lone deer bounding along the shore, are the only objects that vary the monotony of the scene,—the only sounds that interrupt the awful silence of this remote region. In the language of an elegant and interesting writer, it is 'one of those unbounded prospects, where the imagination is not less oppressed than surprised by the greatness of the spectacle. The mind, distressed, seeking, on every side, in vain, for an object on which to repose, finds only a solitude that saddens, an immensity that confounds.'†

"Ascending the Sabine, about 12 miles from its mouth,‡ the river expands into a wide shallow lake, at the northern extremity of which enters both the Sabine and Nétchez. At their junction with the lake, these two rivers are nearly of the same width, about 300 yards. A line of sea-shell banks are found along the shore of the lake, between the Sabine and Nétchez. On the point on the left (or eastern) shore of the Sabine, an immense mound of those shells are found, covered with dwarf trees, which serve as a land-mark, in coming up the lake, to point out the real entrance into the river. Except a few scattered trees on the margin of the lake, the prospect continues to present an expanse of marsh prairie, not more than four feet above common high water. Ascending 15 or 20 miles above the lake, timber begins to appear in larger bodies, the land rising by a slow gradation."‖

LOUISIANA.—RIVER SABINE TO THE MISSISIPI.—The greater part of the country between the rivers Sabine and Missisipi was formerly that of the Indian tribes *Opelousas* and *Attacapas*. Hence it appears on the Spanish charts as the *Tierras de los Opelusas y Atacapas*, and a great part now forms two western districts of the State of Louisiana.

The coasts generally are very low, marshy, broken, and in some parts entirely inundated during the rainy season. The country is intersected by many lakes, rivers, and lesser streams. In Attacapas, on the western bank of the River Teche, are two small towns,—New Iberia, in lat. 30° 3′, and St. Martin's, in 30° 9′; but neither are entitled to particular notice. The Teche falls into the Atchafalaya, and thus communicates with the Mexican Sea. The great body of the present inhabitants of Attacapas are settled along the Teche, this being a superior part of the country; but there are also many beautiful settlements on the Vermilion River, more to the west.

The mouth of the RIVER CALCASIU is about 25 miles to the eastward of that of the Sabine. The coast, in the interval, is generally without wood, and in some parts very marshy. The bar of the Calcasiu, which extends a mile out, has only 4 feet over it at low water, and the great lake within has only 3 feet. The banks of the latter are not more than 4 feet above the level of low water; and at high spring tides are frequently overflown. To enter the river, keep nearest to the west point, until you open the neck, which has a lake on the western side, communicating with it at high water. The water here is fresh and good.

RIVER MERMENTAU.—The mouth of the MERMENTAU is about 27 miles to the eastward of the Calcasiu. The coast between continues low and marshy. The bar,

* Swampy or uncultivated meadow land.—ED.

† Barthelemy.—Travels of Anacharsis.

‡ Mr. Gauld makes it only six miles, which is probably correct.

‖ Geographical Description of Louisiana, p. 165.

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like the former, has only 4 feet on it at low water; but the depth within is much greater. The interior lake, Mermentau, like the Lake Calcasiu, has a general depth of only 3 feet at low water. A few low marshy islands chequer its surface, while the general monotony of its shores are relieved only by clumps of live-oak.

Between the Mermentau and the Atchafalaya, an extent of about 80 miles, the land is variegated in its shape, and forms *Vermilion Bay*, *Cote Blanche Bay*, and that of *Atchafalaya*, the figures of which have been variously represented, and can be best understood by reference to our chart of the Mexican Sea. The River Atchafalaya is a considerable branch of the Missisipi, or rather an outlet from that river, and its waters fall into the bay with great rapidity.

The '*Derrotero*' says that the *Bayou*, or *Creek*, *of Constanté* lies 21 miles to the eastward of the bar of the Mermentau, and has about 7 feet at its entrance, with a greater depth within. The coast thence is evidently described inaccurately; but the point, called *Tigre Point*, between Belle Isle and Bayou Lobos, "may be known by a great row of oak-trees." The southern coast of Belle Isle trends nearly E. by S. 25 miles. Within the isle, on the east, is a range of kays, which divides Cote Blanche from Atchafalaya Bay. The great lagoon, within Belle Isle, which forms Vermilion and Cote Blanche Bays, has a general depth of only 5 to 10 feet, and its western strait, which is the clearest, has a bar of about 5 feet.

ATCHAFALAYA AND TECHE'.—The RIVER ATCHAFALAYA, or *Chafalaya*, has been already noticed. This river may be considered as a boundary of the great *Delta of the Missisipi*. Beyond the distance of four leagues inland, within the Atchafalaya, the land is elevated and fertile; but thence to the sea it is liable to be flooded, and has no wood, except upon two mounts, which are to the eastward of it. Almost S. by E. 4 leagues from the mouth of the Atchafalaya, is *Point Fierro*, or *Point de Fer*; and the intermediate space forms a large bay, much impeded by oyster-banks. Opposite to this bay, on the west, extensive oyster-banks also extend from the southern shore of Belle Isle.* From Fierro Point the coast trends to the E.S.E. 30 miles, to *Racoon Point*, the west point of an isle, called *Buey Island*. The coast all along is bordered with oyster-banks, some of which have scarcely 3 feet of water upon them; and, indeed, there is a chain of them all the way from Bayou Constanté; and they are, in some parts, uncovered at low water. It is, therefore, necessary to navigate with much caution, taking care not to go into less than 7 fathoms, in order to keep clear outside of all the banks. Between the shoals there are channels of 8 feet, which lead to the Atchafalaya, but they can be taken only by vessels of a light draught, and with a good pilot.†

The island TIMBALLIER, which is about 7 leagues to the S.W. of Barataria Bay, is ten miles in length, and trends nearly East and West. At its east end is the bar of the river *Lafourche*, on which there is not more than 6 feet of water; and the interior does not afford shelter from a storm. The coast hence to Barataria Bay is formed by a chain of isles, of which the N.E. and largest is *Grand Isle*.

BARATARIA BAY is a great lake, communicating with the Missisipi by two creeks, which, at the time of the floods, have much water in them. At the entrance is a bar of 9 feet of water, and within the depth increases. This harbour is well sheltered, but there is a strong current in it when the river is in flood, and a vessel here requires to be moored with good cables. The entrance may be known by three distinct clumps of trees, on the east side. There is, also, here a look-out, with a flag-staff, and a cannon for making signals to vessels, by which the situation of the bar is indicated. A vessel may gain a pilot, by firing guns, as a signal for the same, until answered from the look-out.

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* On *Point Fierro*, or *de Fer*, there is now a *lighthouse*, with a *brilliant fixed light*, at 70 feet above the level of the sea; and the river above is regularly buoyed, to facilitate the navigation up the Teché, to New Iberia, &c.: a vote of congress, for twenty buoys, having passed in 1828. It is almost unnecessary to say that the navigation here is intricate and the aid of a pilot indispensible.

† In the night of the 24th of January, 1832, the bark *Zetes*, bound from Waterford to New Orleans, with passengers, struck on an oyster-bank near, or in the vicinity of, Racoon Point. The wind having fortunately veered, the vessel was got off, but was seriously damaged. The persons in command acknowledged *their ignorance of the coast and situation of the vessel*. Here the Zetes remained until Wednesday, 1st Febr. when the passengers, almost on the verge of starvation, requested to be allowed to take one of the boats, in order to attempt a landing on the coast. In this they succeeded, and landed at the entrance of the *Great Point Pass*, Barataria, where they were hospitably received, and supplies were sent off to the vessel, &c.—('*Times*,' 22nd March, 1832.)

In

In advancing up the bight, to the bar of Barataria, whether from the East or West, be cautious not to go into less than 4 fathoms, especially after passing the S.W. Pass of the Missisipi; for the N.E. part of the outer bay is very deceiving, it having many oyster-banks. The coast is low, and mostly covered with bullrushes. Without the bar there is anchorage in 4, 5, or 6, fathoms, in sight of land; but it can be taken only in good weather: in bad weather it is better to keep under sail, keeping in mind that, on this shore, the water runs much to the west, which is caused by the discharge from the branches of the Missisipi. The tide here regularly rises 4 feet.

GENERAL REMARKS, from the *Derrotero de las Antillas*, &c.—ALL THE COAST, which has been described, from SAN BERNARDO to the BAYOU of CONSTANTE', is clean and of good depth; and you may run along it, by the lead, understanding that, at 5 miles from it, you will have 3 and 4 fathoms of water; and, although it is low, you may see it, in clear days, from 8 fathoms of water: but, from the Bayou of Constanté to the isles Buey and Vino, it is most commonly foul and full of oyster-banks, most dangerous to navigation; to avoid which, on passing, approach no nearer than 10 fathoms, in which depth you proceed safely. The CURRENT, from St. Bernardo to the Bayou of Constanté, is weak; but, from the latter to the S.W. Pass of the Missisipi, it runs with strength to the West and S.W., especially during the floods of the river.

WINDS.—In the morning you have the land-breeze; but, when day-light is well come, the wind comes to the East and E.S.E.; and in the evening it rounds to S.W. This, however, is varied in the time of the *Norths;* for, when they blow, which generally is with much force, there is neither land-breeze nor change. The forerunner of a North is the wind from South, which blows, with force, for twenty-four or thirty hours before the other comes on. The weather, in the months of August, September, October, and November, is most to be feared on these coasts; for, in addition to having winds dead on shore, there are violent hurricanes; and thus, in such seasons, you should never go into less than 20 fathoms, either in beating to windward or in sailing along it.

RIVER MISSISIPI.—The *Delta* of the Missisipi is intersected by six outer branches of that river. Of these the four principal are denominated the *Passes*, and are distinguished by the names of the rhombs, or points, towards which they are directed, with the exception only of the northern one, the *Passe a l'Outre*.

This noble river, in its higher latitudes, receives the waters of the Ohio and Illinois, and their numerous branches from the east, with those of the greater river *Missouri*, and other rivers, from the west. These mighty streams, united, are borne down with increasing majesty, through vast forests, and prairies, or meadows, and are at length discharged into the Mexican sea, from the several channels or passes above noticed.

From the mouth of the BALIZE, the S.E. and principal channel of the Missisipi, the distance to the city of NEW ORLEANS is about 93 nautic miles. The depths are, generally, 17 feet of water into the Balize, 12 feet over the bar, 40 feet within, and deepening very considerably afterwards; but they are variable. The winds make a difference over the bar, but the depth is commonly from 11½ to 14 feet.

NEW ORLEANS.—The side of New Orleans, next the river, is open, and secured from inundations by a raised bank, called the LEVEE, which extends from a considerable distance below the *English Turn, (Detour des Anglais,)* to a great distance up the river, with a good road for travellers all the way. The vessels which sail up, haul close alongside the bank, next to the city, to which they make fast, and take in or discharge their cargoes with great facility. At the town, the river is about 800 yards wide, and 23 fathoms deep, and the bank so steep that the ships lay a plank to the shore.

NEW ORLEANS has been described by Mr. Darby, in his '*Description of Louisiana,*' 1817. From that work we derive the following particulars: The city, which is the capital of the State of Louisiana, stands upon the left bank of the Missisipi, in lat. 29° 57', and long. 90° 8'. W. of Greenwich. It consists of the city, properly so named, in the form of a parallelogram, 1320 yards along the river, and 700 wide, backward, towards a swamp. Above the city, and adjoining, is the suburb of *St. Mary*, and above St. Mary's that of the *Annunciation*. Below the city are the suburbs *Marigny, Daunois*, and *Declouet*. Between the city and Bayou St. John, to the north, are St. Claude and St. Johnburg. But little of the ground laid out in the streets and lots in the suburbs is yet built upon. The houses, except in the city, occupy but a small distance from the river. Wood is the chief material, though many fine brick-buildings exist, and that substance is annually increasing in use. Stone is found at too great a distance to be

ever

ever very extensively used in New Orleans. The streets are not yet paved; though a paved footway lines most streets in front of the houses, with gutters to carry away the surplus water. The public buildings are the town-house, church, military and civil hospitals, barracks, custom-house, and theatre.

Mr. Darby adds, "By the census of 1810, New Orleans and suburbs contained 17,242 persons. There has been a constant and sometimes a rapid increase since the period of taking the census. An annual increment of 1000 may be safely added, giving, for the present population, 24,242 persons. The actual number exceeds, rather than falls short, of this estimate.*

"No city, perhaps, on the globe, in an equal number of human beings, presents a greater contrast of national manners, language, and complexion, than does New Orleans. The proportion between the whites and men of mixt cast, or black, is nearly equal. As a nation, the French among the whites are yet most numerous and wealthy; next will be the Anglo-American *(Fredonian)*; thirdly, the natives of the British Islands. There are but few Spaniards or Portuguese, some Italians, and scattered individuals of all the civilized nations of Europe.

"There are few places where human life can be enjoyed with more pleasure, or employed to more pecuniary profit.

"The prevailing wind of Louisiana is from the South; the current of air is from that point, or within a few degrees east or west from it, more than half the year.

"The seasons admit of the Boreal division of spring, summer, autumn, and winter. The approach of spring is announced, in the month of March, by an almost continual South wind, which gradually induces warmth and vegetation, often attended with very heavy rains, and interrupted by chilling North and N.W. winds, which latter end in clear serene weather, succeeded by a return of South wind and rain. The month of April is generally ushered in by an increase of southern winds and heat; vegetation is extremely rapid, though frost has sometimes been known in this month, sufficiently severe to kill the cotton and other tender shrubs. The month of April, in these regions, is, in reality, the representative of May of the higher northern countries; it is the season of gaiety and renovation throughout all nature. Enough of the coolness of winter remains to give an agreeable freshness to the air.

"Before the beginning of May, in common seasons, the force, frequency, and regularity, of the south winds has ceased, and dry weather commences. The heats of summer now increase rapidly; vegetation is vigorous, though often checked from want of rain. The month of June differs but little from May, except in increase of heat.

"It was a remark made by the late Mr. Dunbar, of Natchez, that the wind, during the day, in Louisiana, almost uniformly, in the summer months, blows about three degrees behind the sun, keeping at that distance throughout the day. The wind commences with the rising of that luminary.

"The nights are uniformly temperate. It is a fact, that the oven-like heat often experienced in high northern latitudes, in the summer evenings, is unknown in Louisiana.†

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* The population of the State of Louisiana, by the census of 1831, was 215,739; but this number unfortunately includes 109,588 slaves. That of New Orleans, by the same census, was 48,647. The thriving town of *Donaldsonville*, at the efflux of the River Lafourche, is the first village on the Missisipi, above New Orleans, worthy of notice.

The important post of *Fort St. Philip*, at the Plaquemine Bend, 11 leagues from the Balize, is, emphatically, one of the defences of Louisiana. *Fort St. Leon*, at the lower extremity of the English Turn, about 26 leagues up, is well situated to impede the progress of ships of war up the river. *Fort St. John*, at the entrance of the Bayou, or Creek, of St. John, in Lake Pontchartrain, is well situated for the defence of this important pass. From the nature of the country, armies can proceed by water only to New Orleans. *Fort Darby*, on the east, was built during the campaign of 1815, by order of General Jackson, in order to prevent any advance from that direction. —*W. Darby.*

† "An oven-like heat was constant at New Orleans, during my stay there, day and night. Thermometer never below 85° when placed in the draught of our cabin-windows, where I remarked that it was always as low as it was in the houses on shore; which may be easily credited, when the effect of the deck-awnings is considered.

"A new town, to be called *Macdonough*, has been planned to be built opposite New Orleans, on the other bank of the river. The situation is said to be more salubrious than that of the city, but I am inclined to think very little difference will be found, if it ever becomes equally populous."—*A. L.* 1819.

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"With the month of July showers commence, often attended with very loud thunder. Sometimes the rains are excessive. The heat of the sun, now in full force, is often extremely oppressive. The mosquito, that insect of which so much has been said, now presents its millions in the swamps and woods adjacent to the lakes or marshes.

"From the immensity of its length, the Missisipi floods have not gained their full elevation before May or June; of course the swamps are draining when the heats of summer are the most intense.

"Most of the surface of the parish of New Orleans is morass, covered with grasses. Wood is found only partially upon the banks of the Missisipi, &c. The climate of the state is within the range suitable to the sugar-cane, and many very fine sugar-farms are in operation, both above and below New Orleans. Maize, rice, indigo, cotton, and tobacco, all grow luxuriantly: the last four have formed, and, except indigo, continue to form, staple commodities. Most culinary vegetables, suitable to the climate, are cultivated in the parish, and brought into the market, of New Orleans. The peach, orange, and three or four species of the fig, are the exotic fruit-trees that have been most extensively introduced on the Missisipi. All these fruits are, in their respective seasons, abundant in the New Orleans' market. Apples are brought mostly down the Missisipi; and are, in winter and spring, sold cheap. Of culinary vegetables, the most abundant are pulse of all kinds, cabbages, turnips, sweet potatoes, onions, carrots, and lettuce."

Such are the advantages: but hurricanes and the yellow fever are lamentable drawbacks from the prosperity of New Orleans. Below the city the former are terrible, and sometimes cause great and dangerous inundations of the river: they generally happen in August. A letter, dated New Orleans, 21st of August, 1819, says, "You have, no doubt, heard of our late hurricane; the force of the wind and sea must have been very terrific: in about two hours the water rose 20 feet perpendicularly, sweeping every thing before it. All human skill and knowledge availing nothing. A hurricane, so early in the season, and with such violence and duration, is not recollected by the oldest inhabitant. Houses and trees, which have withstood storms for many years, were totally destroyed and swept away.

"It appears literally to have been a war of elements; for the feathered and finny tribes appear to have suffered as much as man and beast.

"Not a vessel that I have yet heard of has survived the gale, between the Lake Borgne and Mobile Bay."

In the same season, that dreadful visitation, the yellow fever, which had so lately extended to Philadelphia and New York, afflicted New Orleans. In September, 1819, the whole city appeared like one house of affliction and mourning; and the white population, remaining in the city at that time, was supposed to be not more than 8,000 or 10,000 persons. Mr. Darby has probably been too sanguine in his estimation of its prosperity; but his remarks, which follow, are indubitably correct: "A glance of the eye upon a map of the valley of the Missisipi and tributary streams will suffice to give conviction of the importance of New Orleans; but it demands deep reflection to foresee what is necessary to preserve the lives of the thousands who will daily visit this mighty and increasing mart. Immersed in their own present concerns, most men never bestow a thought upon any subject upon which they are not directly concerned. This has ever been, and, perhaps, ever will be, the common routine of human affairs. There are noble exceptions to this selfish and exclusive principle: it may be hoped that Louisiana will add one more." Again, "It ought not to be forgotten that there are enemies who have carried death and ruin into cities, and against whose attacks cannons or forts would be no defence. That nine-tenths of the distempers of warm latitudes could be guarded against, I do not harbour a single doubt. Temperance, fresh air, good sound food in plenty, and, above all, cleanliness of house and person, would contribute more to secure cities and countries from pestilence, than all the quarantine regulations that were ever framed."

DIRECTIONS FOR THE MISSISIPI, &c.—The following directions and remarks were written by Mr. W. A. Somers, branch-pilot for the Balize, in August, 1818.—The additional remarks, &c. are those of Capt. Andrew Livingston, by whom the whole has been obligingly communicated.

The LIGHTHOUSE, at the entrance of the river, stands North, by compass, from the S.E., or Balize Passe, (or entrance,) of the river; but vessels coming in at night ought not to bring it to bear more to the northward than W.N.W., where they may anchor in

12 or 15 fathoms, muddy bottom; and, in the day-time, when the wind from the Northward, or Northward and Eastward, lie-to, (or lay off and on,) with these bearings, until they receive a pilot.*

The block-house bears from the bar N.W. by W. ¼ W. distant about 5 miles. Vessels should not bring it to bear more to the northward than W.N.W., where they may anchor in 10 fathoms of water; they will then have the masts of a wrecked brig, lying to the northward of the channel, in one with the block-house. This is the mark for the proper anchorage, in waiting for wind and tide over the bar: and hence the entrance of the S.E. Pass will bear from the vessel S.S.W., distant about one mile.

At the same anchorage the lighthouse will bear about N.N.W. There are plenty of pilots at the Balize, in opposition to each other; and a vessel rarely, if ever, will be at a loss for one.

After leaving the Balize, or block-house, when bound up the river, at about a league up, there is a point, on the starboard hand, which you ought not to near more than to be in 7 fathoms of water. After passing that point, you may keep the northern or starboard shore close on board, until you come abreast of a clump of trees, (on that same side,) which lies about half a mile below Passe a l'Outre. Haul over then from the clump of trees on to the middle ground, and pass round it and the shoal point above it, in 7 fathoms of water, in order to avoid the strong indraught into Passe a l'Outre.

No vessel, in coming down, ought to pass this place (Passe a l'Outre, &c.) without a commanding breeze; as, from the shoal on the south side of the river, and the indraught of Passe a l'Outre, on the north side, it is by far the most dangerous place in the Missisipi, below New Orleans.

Half a league above Passe a l'Outre is a point, opposite to which is the upper end of the shoal already mentioned, *(i. e.* the *Middle Ground,)* and you then have deep water athwart the river.

At half a league above that point, sheer over to the starboard shore, and keep along the point on that side, in from 5 to 7 fathoms of water. Opposite to this are the South and S.W. Passes. From hence keep the larboard shore on board, until you reach the Fort of St. Philip and Plaquemine Bend, preserving the distance of about 100 fathoms from the shore, with a stiff breeze; but with light winds you may keep into 5 fathoms of water.

At the lower part of the point, opposite to *Plaquemine*, a shoal makes out on the larboard side, to which give a berth of a cable's length. In the short reach, above Plaquemine, is an eddy, on the starboard side, which vessels should avoid, by keeping on the larboard side, until nearly up with the point on the starboard hand above Plaquemine, when they may cross, and take advantage of the slack water.

In light winds, always keep the lee side of the river, to prevent your sails from being becalmed by the trees. With a fresh breeze it is always adviseable to steer from point to point, keeping your lead going off the points: by steering thus you both shorten the distance and avail yourself of the eddies, which make to leeward of each point. Observe, at the same time, not to follow the points so close round as to get your sails becalmed above them by the trees.

Two leagues above Plaquemine you will come to the *Little Prairie* (which is a marsh) on the starboard side; and there is no shoal of any consequence until you come to the Great Prairie, (also a reedy marsh,) which is two leagues above the Little Prairie, or four leagues above the fort at Plaquemine, and is also on the starboard side of the river.

Opposite to this marsh is a shoal, which runs along the larboard shore the whole length of the Prairie, and extends out into the river about two cables' lengths (where broadest) from the bank of the river. About four leagues above the Grand Prairie is *Point La Hache*, off which, on the starboard side, a shoal extends about 100 fathoms; under which an eddy, which ought to be avoided, makes into the bend below at Poverty

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* MISSISIPI LIGHTHOUSE.—In consequence of a failure in the foundation, it was found necessary to pull down the stone and brick tower originally intended; and, upon the base, a wooden superstructure has been erected, on which an excellent steady light is now exhibited. This lighthouse stands on *Frank's Island*, North (by compass) from the bar of the S.E. Pass, at the distance of 3 miles, and in a situation not approved by the pilots. The lantern has 28 patent lamps and reflectors, at 70 feet above the level of the sea.

Point.

Point. About five leagues above Point La Hache are two dangerous eddies, (one on each side of the river,) which ought to be avoided. At this place the river makes a short bend to the North. The point (Poverty Point) is uncultivated, or nearly so; but there are several huts, or small houses, about it. From Poverty Point to the English-Turn *(Detour des Anglais)* is about five leagues.* In the English-Turn it is always adviseable to keep the starboard shore on board. From the English-Turn to New Orleans is six leagues. At the upper end of the turn is a considerable eddy; and at the point on the starboard hand, two leagues below the city, is a shoal, which extends some distance into the bend below, and runs off shore about 100 fathoms. After you pass this point, sheer over, and take the larboard shore on board, keeping in 5 or 6 fathoms of water, until you come within half a league of Slaughter-house Point,† which is nearly opposite to the lower part of the city. Then give the shore a berth of a cable's length, to avoid a shoal, which makes off from the bank, and the eddy, which is directly under the lee of the point. After this run across from the point, having your anchor all ready to let go; and, when well over on the New Orleans side, anchor in from 10 to 15 fathoms of water. It is necessary to have a hawser, ready to run ashore, to haul you into the tier of shipping, immediately alongside the *Levee*, as may be ordered by the harbour-master, in order to avoid the effects of the eddy, which sets sometimes up, and sometimes down, along the whole tiers of shipping.

GENERAL OBSERVATIONS ON THE RIVER.—Where the points appear steep-to, there is generally deep water; but where they are low, or covered with low brushwood, there are almost always shoals stretching off.

The SHOALS NEAR THE MOUTH OF THE RIVER are increasing rapidly, in consequence of the drift-wood which is annually deposited there by the stream. Six years ago the top of the Middle Ground, at Passe a l'Outre, just shewed above the lowest stage of the water; and at this time it is always above, with rushes growing and drift-wood lying upon it. In short it is now a complete island.

All vessels in the river ought to keep a sharp look-out for PLANTERS, SAWYERS, and SNAGS, all of which are exceedingly dangerous.

PLANTERS are trees, with one end fast in the bottom, and the other inclined down the stream. Sometimes their ends are above water, sometimes level with, and sometimes some feet below, the surface of the river, which latter kind are the most dangerous; though, with a sharp look-out, the places they are in may generally be discovered, from the small ripples, or eddies, which they occasion.

SAWYERS are trees, with one end resting on the bottom, and the other moving upwards and downwards with the strength of the current, with a motion resembling that of a man sawing wood.

SNAGS are trees, with branches still adhering to them. Like planters, their roots are always resting on the bottom, and their branches and top form a sort of *chevaux de frize*, in parts of the river. When strong branches happen to be broken off from them, the remaining stump is very dangerous.

REMARKS BY CAPT. LIVINGSTON.—Capt. Somers says that the tide at Balize flows about 8 *a.m.* on full and change days of the moon. There is only one tide in the twenty-four hours. Ordinary tides rise about 22 inches, spring-tides 26, and neap-tides only 18, inches. Both the time of high water and the perpendicular rise of the tide are much influenced by the winds; easterly winds raising the tides, and westerly winds keeping them down.

Every master of a ship ought to attend particularly to having a good crown-line to his kedge, and a haulabout-block lashed under the bowsprit, as recommended by the late Captain Davis.

The river at New Orleans is about 800 yards broad, and the greatest depth about 23 fathoms. As the Deputy Harbour-master assured me, the general velocity of the current does not exceed two knots.

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* About midway between these a quarantine station is now established, on the starboard shore.——A. L.

We have been informed that a dangerous shoal has grown up in the river, off Poverty Point, in consequence of some vessels having grounded there, and been obliged to heave out stone ballast.

† Slaughter-house Point is sometimes called *One-Mile Point*. It may be seen or *smelt* at a considerable distance.——A. L.

Light

Light and lofty sails aid a vessel much in getting up the river, as they are not so liable to be becalmed by the trees as low ones.

Squalls are very frequent, and heavy, in the river; but they always show before they come, and a good look-out must be kept for the black clouds, which they always accompany. When they do come, they come with their utmost violence at once. Coming down the river is much more dangerous than going up. A vessel once getting fresh stern-way when coming down, runs a very great risk of carrying away her rudder against the bank. The river-pilots, not being branch-pilots, are generally unworthy of trust; and a master of a ship, who possesses any confidence in his own abilities, will, I am certain, manage better without one, by attending to the preceding and following directions.

A sharp look-out for thieves ought to be kept on board of every ship at New Orleans. Boats, if not on deck, ought to be chained every night, and no loose articles left about the deck; for it is next to impossible for the master of a vessel to get a regular watch kept, there are so many temptations held out to the seamen, particularly British.

The PASSES.—In running from Passe a l'Outre in the night, it is not safe to keep in less than 15 fathoms. In the day you may approach into 8 or 10 fathoms, observing to keep your lead going. Being off Passe a l'Outre in 15 fathoms, to go round the N.E. Passe, in 10 fathoms, the course is S.S.E. and the distance 2 leagues. From the N.E. Passe to the anchorage off the Bar of the Main (*i.e.* the Balize or South-east) Passe, the course is S.S.W. distance 1½ league. The best anchorage off the Bar is with the Block-house bearing W. by N. or W.N.W., in from 8 to 10 fathoms of water.

From the entrance of the channel over the Bar, the Balize (or Block-house) bears N.W. by W. ½ W. by compass, distant 5 miles.

By mer. altitudes of the sun, taken by me with a Troughton's circle and an artificial horizon, and by Captain Somers, with my sextant by Bradford, with the nautical horizon, we found the latitude of the Block-house *(Balize)* to be 29° 7′ 55″ North, and the latitude of the centre of the Bar, by the W.N.W. ½ W. bearing and distance from the Block-house, to be 29° 5′ 27″ North.*

On approaching the River in foggy weather, you may either anchor in 12 or 15 fathoms, or stretch to the northward, as the currents, southward of the bar, set strongly to the southward, and may carry you to the southward of the south point of the Delta, in the longitude of which there are 35 fathoms, at three miles from the land. In such weather, when the light or lighthouse cannot be seen at least four miles off, a bell is sounded both by day and night, as a caution to those coming in from sea.

The late Mr. S. B. Davis, harbour-master of the Port of New Orleans, wrote the following directions for proceeding to, and sailing up, the River Missisipi. They were given in our former edition, and we now repeat them, from the '*American Coast Pilot*,' with the exception of such parts only as have been superseded by the preceding directions.

"*Vessels bound to the River Missisipi, from the north side of the island of Cuba*, should run to the westward as far as the *Table of Mariel*, or *Bahia Honda*; take their departure thence, and steer N.W., which course will carry them clear of the *Tortugas*: so soon as they are clear of the Tortugas, they should steer N.W. by N. until they get into the latitude of the river's mouth.

"*Ships from the south side of Cuba*, on leaving Cape Antonio, should steer N.N.W. or N. by W. ½ W. until they get into the latitude of the river."

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* Our Chart of the Mexican Sea exhibits the course of the River Missisipi, as it is represented in the surveys of Messrs. Gauld and Darby. By Mr. Gauld's chart, as well as by Mr. Darby's map of Louisiana, the difference of longitude between the bar of the Balize or S.E. Pass and New Orleans, is 60 minutes, or exactly one degree.

An accurate Survey of the whole of the northern coasts of the Mexican Sea, including the River Missisipi, is much wanted. In our endeavours to delineate the coast, from existing documents, we have found discordances, which, if described, would be hardly credible. Let any one, however, compare the coast-lines and positions of Gauld, Darby, and the Spanish chart, and they will be instantly seen. To men of influence, citizens of the United States in particular, we earnestly address these remarks.

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The S.E. or principal entrance of the river is in latitude 29° 5½′. It is now, as already shown, sufficiently distinguished by the new lighthouse. Mr. Davis says, the anchorage about the entrance is every where good; and, should it fall calm, a light kedge will prevent being drifted by the current, which is sometimes strong on the coast, but much stronger in the latitude of the river's mouth than elsewhere, and no soundings until you are close in with the land.

Caution.—Navigators cannot be too cautious, when approaching the *Chandeleur Islands;* not that there is any danger, if they be careful in sounding, but the depth of water diminishes quickly, from 30 fathoms to 15, 10, and 6. From the depth last mentioned, the land can scarcely be seen from the top-gallant-mast head of a ship of 300 tons, in fine weather.

Commanders unacquainted with the coast are frequently alarmed when they come near the river, by the appearance of the water, particularly during the first summer months, when the river is high; because, at that time, the fresh water rushes out with great force, and seems to float on the top of the ocean-water, making an appearance altogether singular and alarming; for, where the fresh water does not entirely cover the salt water, but leaves spots, it has the appearance of rocks; the river water being light and of a milky colour, while the other is quite dark, and changes suddenly.

The Current.—Mr. Davis says, that "The current sets with very little variation to the east; and, when any variation is experienced, it is either to the north or south of the river's mouth. It is very evident, to every man of reflection, that, so large a column of water, rushing into the ocean, must spread when it is no longer confined, and produce different currents, until it has found its level, and will be found to vary from the original course, in proportion as you approach the edges: allowing the current to set due East, I have known two ships to come into the river at the same time, and the one complain of a southerly, and the other of a northerly, current, and that because the one had been to the south, and the other to the north, of the river's mouth; however, as every stranger should get into the proper latitude, before he comes within the influence of its current, I do not think it necessary to say any more on the subject.

Entrance of the River.—Having obtained sight of the Balize or Lookout-house, bring it to bear W.N.W., and run for it, and that will bring you up to the bar. If you see no pilot, you may safely run with your anchors ready to let go, into 9 fathoms of water; and though it should blow hard from the S.E., you will ride without much strain on your cables.

To Sail up the River.—In sailing up, if you have a fair wind, run from point to point, carefully avoiding the bends; and, by doing so, you will shorten the distance, have less current, and, what is of more consequence, you will avoid the danger of having your vessel sunk by the trees which frequently lie under water. As you are coming up to and passing a point, it will be well to have a cast of the lead. With light winds, or when the wind is scant, always keep on the leeward side of the river.

On coming-to or bringing-up.—Every vessel, while in the river, should have its boat along-side, with a good hawser in it, according to the size of the ship, ready to run out to a tree; which method of bringing-up is always preferable to letting go an anchor, for you are sooner under way, and avoid the danger of losing your anchors.

Every vessel, while in the river, should have a haul-about block lashed under the bowsprit, to reeve a rope through, which rope should be bent to the crown of the anchor, in the same way as a buoy-rope, and be strong enough to weigh it; the crown-line should be of length sufficient, that, when the anchor is let go, you may veer it away with the cable, and always have the end on board; as thus, if you should get foul of any thing with your anchor, (which frequently happens,) you will get it again, otherwise you will be obliged to cut your cable, and lose your anchor. If you are obliged to let go anchor, let it, if possible, be at a point, for you will be more likely to find clear bottom. In the bends, the bottom is always foul, being full of sunken trees; and there are few instances where an anchor need be let go in the bends, because you may always make fast to a tree.

Directions for Vessels bound downwards.—Vessels going down the river should always have sufficient sail on them to be able to keep clear of the shore; without great care you will be driven into the bends, and lose your rudder; and this has frequently happened with experienced seamen: we would observe, also, that every vessel, unless the wind be fair, and settled weather, should bring-to at sun-set.

If BOUND to the STRAIT of FLORIDA, *after leaving the river*, avoid getting too fast to the southward, or you will meet with the trade-wind too soon, which will lengthen your passage. Should the wind permit, steer E.S.E., which course will carry you soon enough into the trade-wind. If you can obtain soundings to the northward of the Tortugas, so much the better; but you should come no nearer in than in 50 fathoms, and should then steer South; and if you should find the water shoaler in this course, you should keep a little to the westward until you find it deeper. On leaving the Tortugas, a sufficient allowance should be made for the current; and the safest way thence will be to beat up off the shore of Cuba.

To the preceding Directions for making the River, we may add that, Captain Hester, an intelligent English navigator, had previously said, "I would advise you to be careful of not running down more to the southward than 29° 15′, or to the northward than 29° 20′ N. You will not strike soundings above 8 or 9 leagues off, and have very deep water, muddy ground; *the current setting strongly to the northward or southward*, as you fall in with the entrance.

"The mouths of the Missisipi are formed by mud-banks, continually increasing, which owe their origin to the great number of trees that incessantly float down the river, and ground at its entrance into the sea. These banks are not discernible from the mast-head at above 4 leagues distance, in clear weather."

The south end of the Grand Gosier, or southernmost of the Chandeleur Islands, lies from the Balize Bar N. by W. by compass, between 7 and 8 leagues: you should not stand nearer, in passing between, than 10 fathoms, in the night or thick weather; then you will have sand, with black specks, and not be above 4 or 5 miles from them. Between the south end of the Grand Gosier and the Balize, there is a deep bay, *La Poza*, over which there are 7 to 4 fathoms of water, very even soundings, sand and mud.

In some general directions for sailing from Pensacola to the Balize, by Mr. GAULD, this gentleman says, "It is best to steer so that you may fall in to the northward of the Balize, and never stand in to less than 12 fathoms in the night-time. The soundings immediately off the Balize are very deep, there being 20 and 30 fathoms within a few miles of the shore, soft muddy bottom. The land off the Balize has no trees upon it; nothing but reeds and mud-banks are to be seen for some miles before you come to the mouth of the river. Whenever you lose sight of the trees, you are sure to be very near the entrance of the river. Sometimes the masts of vessels lying in the river are seen over the land.

"Between the island of GRAND GOSIER and the *Isle au Breton* (to the S.W.) there is good anchoring in 3½ or 4 fathoms, where you may lie sheltered from easterly winds, to which the entrance of the Missisipi is much exposed. If you should find occasion to go there, you may range along the island of Grand Gosier, in 3 or 4 fathoms, about 2 or 3 miles off shore, where the soundings are regular: and you will observe a spit of breakers running from the S.W. point, about two miles in length. Keep pretty close to the western extremity of that spit, where there are 5 and 7 fathoms; luff up round to the north-eastward till you get under shelter of the island, and come to an anchor. It is very convenient and necessary for those who frequent the Missisipi to be well acquainted with this place."

S.W. PASS OF THE MISSISIPI.—From examinations which have been made, within a few years past, it appears that the S.W. Pass of the Missisipi has improved; and that to vessels going out, it may, at times, be used in preference to the S.E. Ships drawing 16 feet of water have passed it safely. It is said, in the '*American Coast Pilot*,' that, in going down the river, this way, a slight inflection to the right takes you to the head of the Pass, which runs S.W. almost as straight as an arrow.* The shores on each side are very bold, there being 7 fathoms of water in many places almost touching the bank. A vessel can often proceed in this way when it would be dangerous or impracticable to drop down the bend of the more frequented channel past the Middle Ground.

About the same distance has to be gone over in order to reach the Bar at the N.E. or Old Ship Channel (*via* the Balize) or to go down the S.W. Pass; but the course to the latter is direct, and there is no such dangerous shoal as the Middle Ground in going to it. The latter Bar has 4 or 5 feet more water than the other, and the bottom is of soft

* See the particular Plan of the Mouths of the Missisipi, on our Chart of the Mexican Sea.

mud;

mud; whereas that of the N.E. Pass is rather hard and gravelly in many places. During flood-tide there are never less than 20 feet in the S.W. Pass, and about 18 at low water.

Rates of the New Orleans Steam Boats, *for Towing to and from the Balize, as agreed on by the Masters, in* 1827.

From the Levee to the Sea.

	Dollars.
A vessel of 300 tons and upward	150
to the Balize	125
of 150 or less than 300, to sea	125
to the Balize	100
under 150 tons to sea	100
to the Balize	75

*** All vessels taken astern charged at the same rate, and in proportion to the distance they may be towed, in case they are dropped in consequence of bad weather.

From the Balize to Sea.

A vessel of 200 tons or upward	75
under 200 tons	50

From the Bar to the City.

A vessel of 200 tons and upward	300
100 to 200 tons	200
under 100 tons	150

From the S.W. Pass to the City.

A vessel of 200 tons and upward	250
100 to 200 tons	175
under 100 tons	125

From Fort Jackson and Grand Prairie to the City.

A vessel of 200 tons and upward	200
100 to 200 tons	150
under 100 tons	100

From Poverty Point to the City.

	Dollars.
A vessel of 200 tons and upward	150
100 to 200 tons	80
under 100 tons	50

From the English Turn to the City.

A vessel of 300 tons and upward	100
100 to 200 tons	80
under 100 tons	50

For towing through the English Turn.

A vessel of 300 tons and upward	75
100 to 200 tons	60
under 100 tons	40
For towing vessels, of all sizes, *on or off the Levee*	15
For towing vessels with anchors down	20
For towing vessels up to the Point	25
For towing vessels any distance above the Point, *per mile*	5
Cabin Passage, from the Balize to the City.	15
from Fort Jackson	10
from the City, half-price.	

*** For services rendered to any vessel in distress, such charges will be made as circumstances at the time may require.

Navigation by the Lakes to New Orleans, *with* additional Remarks *on the* Missisipi. *By Captain Basil Hall.*

On the 13th of *April*, 1828, Captain Basil Hall proceeded by steam-boat from Mobile to New Orleans, through *Lake Borgne* and *Lake Ponchartrain*. At New Orleans he found the surface of the river 6 or 7 feet higher than the level of the streets and adjacent country. The swollen river looked so like a bowl, filled to the brim, that it seemed as if the smallest shake or least addition would send it over the edge, and thus submerge the city. Thirteen large steam-vessels were lying along the banks of the river. Lower down the stream were about 100 *arks*, or rough flat-bottomed craft of the interior, by which the grain, salted meats, spirits, tobacco, hemp, skins, and fruits, of the vast regions bordering on the Missouri, the Ohio, and the Missisipi, are brought down to the ocean. They are then broken up.

M. Pilie, the Surveyor-general at New Orleans, says that, "At New Orleans the difference between the level of the highest water and that of the lowest is 13 feet 8 inches. The tide is not felt, and the rise and fall are caused exclusively by the rainy and dry seasons in the interior."

The Missisipi begins to rise generally in the month of January, and continues swelling till May. It remains full all June and considerable part of July, after which it begins to fall, and continues decreasing till September and October, when it is at the lowest. Sometimes the river begins to rise in December.

When the river is fullest, the fall to the sea, or inclination of the surface, is about 13 feet, or one inch and a half to a mile.

On ascending the river, we find the perpendicular space between the rise and fall of its surface to increase. Near the efflux of the *River Lafourche* (at Donaldsonville) it is 23 feet.

23 feet. At *Baton Rouge*, 200 miles from the sea, the pilot-books state it to be 30 feet. At *Natchez*, 380 miles from the sea, it is said to be 50 feet. The velocity of the middle current, between the Ohio and the sea, seldom exceeds four miles an hour.

5.—The COASTS and HARBOURS on the North and East, from the MISSISIPI to the South Point of FLORIDA; including, also, the Tortugas and Martyrs, or Florida Kays and Reefs.

The coasts and isles to the northward and north-eastward of the Missisipi are invariably flat, and very little elevated above the level of the sea; and the navigation, with the soundings, in this quarter, will be best understood by reference to the Charts.

From the Passe a l'Outre, or N.E. Entrance of the Missisipi, the direct course to the Bar of Mobile is N.E. ¼ N. [*N.E. by N.*] and the distance 26 leagues. The intermediate navigation has been described as follows, in the *Derrotero de las Antillas, &c.*

LA POZA.—From the Passe a l'Outre, the coast of the Delta, or of the Plain of the Missisipi sweeps to the west, and afterwards to the north, to the parallel of 29° 25′, above which lies *Cayo Breton*, with its group of islets: the western limit of this kay is 5 miles distant from the coast, and the bay to the southward of it (*La Poza*, of the Spanish Charts,) has from 4 to 6 fathoms, with some shoals of less water, as may be seen in the Chart.* To the east of Breton Kay, and at the distance of 4½ miles, is the isle called *Grand Gosier*, from which a great spit with breakers extend about N.N.E., 10 miles, to *Log Island*, which is the southernmost of the *Candelarias*, or *Chandeleur Islands*. These are various islands, extending to the North 23 miles.

CHANDELEURS, &c.—Cayo Breton, the Grand Gosier, and the Chandeleurs, form, with the coast, a great gulf, almost shut in on every part, but to which you may enter either between the coast and Kay Breton, or to the north of the Chandeleurs. The regular depths in this gulf are 8, 10, and 12, feet; so that small vessels only can sail in it.

All these islands are very low, with some small brushwood on them, and they form a very dangerous piece of coast, not only because they cannot be seen at a moderate distance, but because the S.E. winds, which blow hard in the winter, blow right upon it. There is, however, good shelter, for every class, off the western side of the northernmost Chandeleurs, towards its north end: To this anchorage the name of *the Road of Naso* has been given, and it is the only shelter, for large vessels, on all the coast hereabout; not only because it is sheltered from the on-shore winds, but, also, because it has no bar, breakers, or any other obstacle, to prevent its being entered at all times. To enter, you have only to round the north point of the island, in 5 or 6 fathoms of water, which will be at a mile from the shore; and, steering afterwards to the West and South, but without getting into less than 4, 5, or 6, fathoms of water, according to your vessel's draught: you may anchor when the north point of the island bears N. by E. ½ E. [*N.N.E.*] at the distance of 2 miles, in 4 fathoms; but, if you seek deeper water, it will be necessary not to run so much to the south, but to anchor when the point bears N.E. by E. ½ E., where you will have 5 fathoms. On these Chandeleur Islands you may find water with facility, by making wells or pits in any part of them; but you can obtain no wood from them, excepting drift-wood, of which there is always abundance on the shores. The land of these isles produces only a myrtle, from which a green wax is extracted, and which was the cause of their being named *Candelarias*.

N. by W. 13 miles from the northern extremity of the Candelarias, is *Navios* or *Ship Island*; to the west of this, and at the distance of 7 miles, is that of *Gato*, or *Cat Island*, and to the S.S.W. of that, a group of kays, named *San Miguel's*, or *St. Michael's*, extend from the southern shore: between these and Cat Island is the pass into *Lake*

* See the particular Plan of the Mouths of the Missisipi, &c. in the new Chart of the Gulf of Mexico.

Borgne

Borgne, or *Blind Lake*, and *Lake Pontchartrain*, in which there is very little depth.* From Lake Borgne, eastward, the main-land trends to the E.N.E., and extends thus to the northward of Cat and Ship Islands, which lie about 6 miles from it.

Between Cat Island and Ship Island, there is a great shoal, with little water on it, which, running out from the east end of the first, leaves a channel of only a mile in width between them. To the northward of the westernmost part of Ship Island, and at the distance of a mile and a half, there is anchorage in from 4 to 5 fathoms; but, as the channel has a bar, with only 12 feet on it, large vessels cannot reach it. *Ship Island* is narrow at its extremities; and its middle, which is broader, is covered with grass, and has some pine-trees on it, but the rest of it is entirely barren. There is a well of very good water on its north shore, and near the middle of it.

From Ship Island, at 5 miles to the eastward, is the west end of *Horn Island*, and between them there is a little islet named *Perros* or *Dog's Isle*. From Ship Island extends a shoal, which not only surrounds Dog's Isle, but advances so much to the east, that it leaves a channel of only one-third of a mile wide between it and Horn Island; and although in this channel there is a depth of 5 fathoms, yet on a bar, at its entrance, are only 15 feet of water.

Biloxi Bay.—Upon the main land, opposite Ship Island, is the *Bay of Biloxi*, of very little depth; and, about 9 miles to the east of it, the River Pascagoula discharges its waters. From this the coast trends nearly East, 21 miles, and then abruptly turns to the north, and forms the western side of the great bay of Mobile. The last portion of coast is shut in by the *Massacre* and *Dauphin Islands*, which lie to the east of Horn Island, with several smaller ones: the space of sea shut in between these islands and the coast is about 7 miles in width, but very shallow, and navigable for small vessels only. The shore is full of lagoons, with clayey bottoms; but, at 2 or 3 miles in from the shore, the land is covered with oaks and pines, and the third part is sandy.

Horn Island is about 13 miles long, from east to west, and about one in breadth; there is some wood on it: but the east part of it is entirely arid, and there are some sand-hillocks on it. The Massacre Island is rather more than 2 miles distant from Horn Island; and between the two is a flat, with only 6 feet of water: the island is about 8 miles in length, very narrow, but remarkable, because it has a thicket of trees on its middle part, while there is not a tree on the rest of it. From Massacre to Dauphin Island, the distance is 4 miles, and a shoal extends almost the whole way. Dauphin Island is about 6 miles in length, and two in width, where broadest. The western part of it is a narrow tongue of land, with some withered trees; the rest of it is thickly covered with pines, which, at the east part, almost come down to the beach.

Dauphin Island forms the west part of the entrance of the Bay of Mobile; and, on the north, another island, named *Gillori*, succeeds it: from this to the continent there is a chain of shoals, through the straits, among which boats only can pass. Within a mile to the south of Dauphin Island is *Pelican Island*, which is arid and small; about 3 miles from Pelican, to the east of it, is the east point of the bay, which is named *Mobile Point*, upon which there is a fort, a lighthouse, and a thicket of bushes.

From the notes of a British Officer, 1815, we learn that the islands which have lastly been described very much resemble each other, and all are surrounded by banks of sand. On each is a miserable hut, containing a French family, who live by the chace and on fish, with a few sweet potatoes, &c. The whole are low, humid, intersected with lagoons, and covered with small fir-trees and oaks: among the latter are wild bullocks, whose flesh is fishy and unpalatable. A few pigs and some poultry may be obtained; but there is abundance of wild fowl and very fine fish, particularly mullet, trout, &c. with oysters. Wood is also abundant, and very good water is obtainable, by digging wells in the sand on the beach. In the anchorages the ground is of soft mud.

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* For the convenience of vessels passing this way, a law was passed by Congress, in 1827, for building a lighthouse on Cat Island.

Of Lake Pontchartrain, it is said, the depth decreases annually; so that it may, in the course of years, become a marsh, as well as the lakes Maurepas and Borgne, to the westward and eastward of it.

The Lake Maurepas communicates with the Missisipi by the river Iberville, which is quite dry in summer, its bed being above 12 feet above the lowest level of the Missisipi; but in spring, when the river rises, it discharges a part of its waters by the Iberville into Lake Pontchartrain.

When uninfluenced by the winds the tides here flow once in the 12 hours; rising and falling from 18 to 24 inches; but, being generally influenced by the winds, they are irregular.

N.E. and N.W. winds are prevalent, and commonly blow very hard. These winds shoalen the water between the islands and main; reducing it one or two feet, if not more, and they keep the water out until a shift takes place. S.E. and S.W. winds, on the contrary, fill the anchorages, but seldom blow hard home. The waters, both on the inset and outset, set strongly; in the passages between the banks and islands frequently at the rate of three miles an hour, but more generally from a mile to a mile and a half.

The main land opposite to the islands is low; being composed of sand, mud, and slime, intersected with shallow lagoons: here is an abundance of fir, oak, and cedar, trees. On the coast, here and there, are a few huts, containing French families, miserably clothed and lodged, who appear to live by the chace and on fish, with greens, yams, and sweet potatoes.

Vessels which can pass over the Bar of Sand between Cat and Ship Islands, on which there are not more than 18 feet of water, and generally less, may have safe and good anchorage between the S.W. extremity of Ship Island and a shoal to the N.E. Here the vessel may be placed within a cable's length of the beach, and water, from wells dug in the sands, hauled alongside in rafts. At the other islands a vessel must lie farther off; as on the beaches there is generally a surf, which is sometimes heavy and dangerous.

MOBILE, &c.—Between Dauphin Island, Pelican Island, and Mobile Point, there are shoals extending out from all of them, and which leave a channel of only about one-third of a mile in width; these shoals extend to the southward about 4 miles; and this is the length of the channel, in which there are from 4 to 7 fathoms, except at its beginning, where there are only 15 or 16 feet. The new lighthouse on Mobile Point exhibits a brilliant *fixed* light, at 55 feet above the level of the sea. Besides this lighthouse several buoys have been laid down to facilitate the navigation. On the Bar, in 17 feet of water, on the eastern side of the main ship channel, is a spar buoy, painted *black above white*, the lighthouse bearing, by compass, North, distance 5¼ miles. Passing this buoy, the course in is N.N.W. ½ W. in 4, 5, 6, and 7, fathoms of water, until past Sand Isle [*Little Pelican?*] on the larboard hand.

E. ¼ N. from the Sand Isle, and on the eastern side of the channel, is another spar-buoy, painted *white above black*, in 10 feet of water, lying on a very steep bank; midway between which and the island is the main channel.

W.N.W. from the lighthouse, on the west bank, in two fathoms of water, is a third buoy, painted white. There is also an iron spindle or beacon on Sand or Little Pelican Isle.

To enter, bring the east end of Dauphin Island to N.W. by N., [*N. 26° W.*] and, following this course until Mobile Point and Fort bear N. ½ W. [*North*] at the distance of 4 miles, you will be very near to the step of the bar, in 7 fathoms: from this spot, instantly, and in another heave of the lead, you may be past the bar, and be again in deeper water. It ought always to be kept in mind that this bar, being so very steep, is continually altering when there is a swell on; therefore, no vessel drawing above 10 feet ought ever to attempt crossing it in bad weather. The first direction of this bar is towards Dauphin Island, by which you ought to steer at more than the distance of a mile; and, having passed the knee of the east shoals, direct yourself to the N. by E. ½ E. for Mobile Point, to the north of which you may anchor in 5 or 6 fathoms, but without shelter; for the bay is very large, and the current in it very rapid.

From Mobile Point to the fort and town, which are on the northernmost part of the west coast, the distance is 9 leagues, and the depth diminishes gradually from 3 to 2 fathoms and less water.

The Town of Mobile, at the mouth of the river, is built on the side of a hill. It was, formerly, a city of considerable importance, is pretty regular, of an oblong figure, and situated on the west bank of the river; but the greater part was burnt down in the autumn of 1827. The Bay of Mobile terminates at a little to the north-eastward of the town, in a number of marshes and lagoons, which subject the inhabitants to fevers and agues in the hot season. *Fort Concle*, which stands near the bay, towards the lower end of the town, is a regular fortress of brick, and there is a neat square of barracks for soldiers.

soldiers. At a mile below this, on *Choctaw Point*, is a harbour-light, for which a grant was made in 1828. This light, bearing N. by W. ½ W., leads directly up to Mobile.

Large vessels cannot go within 7 miles of the town, so great a part of the bay being shoal.* On the shores are great numbers of alligators, as well as in the rivers and lagoons.

Mr. Darby says that, "Above the bay, the river of Mobile presents an appearance nearly similar to that of the Missisipi; but the banks of the bay are generally high, and not subject to inundation.

"Between the localities on the Missisipi and Mobile rivers there exists a very strong contrast. From the shortness of its course, the latter is scarcely subject to any of the evils attending an inundated country, when compared with the former. The floods of the Mobile are sudden, and soon subside: they occur at most seasons of the year, but are most abundant in spring. Before the violent heats of summer, the waters of the Tombigbee and Alabama are abated, and their swamps are, in a great measure, drained."†

In February, 1815, H.M. ship *Gorgon*, Captain R. R. Bowden, lay at anchor, in 6½ fathoms, sand and mud, clean good holding ground, three miles South of Dauphin Island, with the Bar of Mobile bearing E. by N.

While in this situation, a strong gale of wind blew on shore from the S.W., and veered to the S.E. A long heavy sea set in,—the ship pitched deep with a heavy roll,—perhaps from an *undertow*: in this manner, with a whole cable, and top-gallant-masts struck, the ship rode perfectly safe, with little strain on her cable, for thirty hours, when the wind shifted to East, and from East to N.N.E., and blew very cold and heavy for thirty-six hours. The strong southerly swell, setting on shore, caused the ship to roll heavily, but perfectly safe and easy.

Captain Bowden says, "I never observed either a S.E., S.W., or N.E., gale continue forty-eight hours,—seldom more than thirty. The N.E. gales are heaviest; and perhaps southerly gales are not dangerous. Southerly gales veer round to the eastward, moderate a few hours, and are succeeded by strong N.E. and N.N.E. gales. N.E. gales veer to the N.W. and West, become moderate, and fine in a few hours.

"Having rode out the gales from the S.S.E. and N.N.E. I weighed, on the 23rd of February, for the Havanna, the wind blowing strong from the N.E."

The rise and fall of tide, near the Bar of Mobile, when uninfluenced by the wind, is about 2 feet on the full and change; commonly, 16 to 18 inches.

From Mobile Point the coast trends to the east, and, in the space of three leagues, is sufficiently remarkable, from the spaces it alternately presents, with and without wood. At 4 leagues from Mobile Point, there is a small lake, navigable for boats, and surrounded by high and thick wood; from this lake the coast to the east presents a great number of hillocks along the shore to the Lake and River Perdido, which is nearly 10 leagues distant from Mobile Point; the entrance of this lake is narrow, with a bar of 4 or 5 feet; but afterwards widening considerably, it extends first to the N.E., and then towards the N.W. From the bar of this river to that of Pensacola, the distance, to the eastward, is four leagues.

PENSACOLA BAY, (properly *Gulf*,) is a good harbour; but it has, at its entrance, a bar of only 21 feet of water. The east point of the entrance is the west point of a very long island, named Santa Rose, which is so low that the sea washes over it. To the N.W. of this point of the island, which is named *Point Siguenza*, there are some red gaps or gullies *(Barrancas)* on the coast, which are in the highest land of it. At these gullies is a fort, and it is where the pilots reside. Between these and

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* See the Plan of the Bay, on our Chart of the Mexican Sea.

† The River of Mobile is composed of the confluent streams of the *Tombigbee* and *Alabama*, and is the westernmost of the several large streams falling into the head of Mobile Bay. The *Tensaw*, which falls into the head of the Bay, on the east, is a branch of the same. In the interior, the Alabama, from the N.E., runs through an alluvial country, in a deep cut or trench with perpendicular sides, rising to the height of 60 or 80 feet. The strata are exactly horizontal. On the 3rd of April, 1828, the river had recently subsided from the high level at which it had previously stood during a fresh, and was then gushing out from millions of springs, and pouring in curious cascades into the main stream. It had previously risen to the height of 64 perpendicular feet. Cotton is the great staple of the state.

Siguenza Point is the entrance of the gulf, extending nearly east and west, and which would be very difficult to recognize from sea, were it not for the Barrancas,* which are unequivocal marks for knowing it by.

To the west of Siguenza Point, a shoal, named the *Angel Shoal*, extends from the western coast; there are two sandy islets on it: this shoal extends out about a mile and a quarter to the south; and from it, a bank of hard sand, with 12 feet of water on it, runs a mile farther south, and across, to the east, all the distance to the island *Santa Rosa*: it thus forms the bar, the greatest depth on which is 21 feet. This bar is little more than half a mile in width; and, having passed it, you immediately come into 4, 5, and 6, fathoms.

It is not the bar alone which you have to beware of, in entering Pensacola Bay; for within and abreast of Siguenza Point, there is a shoal of 10 feet of water, very steep-to, and which extends more than half a mile from it; it, consequently, lies out to mid-channel of the entrance. The passage in is to the westward of this shoal.

The Lighthouse of Pensacola, which was erected a few years ago, is situated on the Barrancas, within the Bay, and exhibits a *revolving* light.

Vessels, coming in from the eastward, should keep in 7 fathoms of water until the lighthouse bears N. by W., when they may stand in for the Bar until in 3½ fathoms, which is the shoalest water upon it at low ebbs, with the light bearing as above. After thus arriving on the Bar, steer N.W. until the S.W. end of Santa Rosa Island bears E. by S., and the lighthouse N. ½ W., when you can steer for the light until within the island, and thence haul up into the passage, and steer for the Bay free from danger.

The above directions are applicable to large vessels approaching from the westward, with the only difference that they need not keep in more than 5 fathoms of water until the lighthouse bears N. by W.

Small vessels, not drawing more than 14 feet, may bring the light to bear N. ¾ W. and steer for it in the night until within half a mile of it, where they can anchor with an off-shore wind. But, if they have a fair wind, they may steer E. by N. until sheltered by Santa Rosa Island, where they can anchor in a good harbour until day light.

The ebb sets S.W. and the flood N.E. which should be carefully observed by all vessels coming in, as the ebb sets on the Caucus Shoal, and the flood directly in over the Middle Ground.

If, on entering, you find the vessel has deviated from the given direction, by a prevailing current, you must take care to rectify that, by keeping a little to the larboard or starboard; so that, when you are up with the bar, the eastern extremity of the Barrancas will bear N. ½ W. [*North*]; and, having crossed the bar, with the course above given, the western extremity of the Barrancas will bear N. by W., [*N. 5° W.*,] which will be when Point Tartar appears well open of Siguenza Point; and then you will steer the said course, keeping the vessel's head to the western extremity of the Barrancas: with this course you will pass about a cable and a half's length to the west of the shoal: you must follow this course until you have Point Siguenza bearing East, whence you will change it, by keeping the prow to the eastern extremity of the Barrancas; and, so soon as Siguenza Point bears E.S.E., steer towards Point Tartar; and, finally, change the course to East, so soon as Siguenza Point bears South; and, when upon this last course (East) you have passed a little to the east of Point Tartar, you will steer N.E. towards the city of Pensacola, which will be nearly two leagues distant; and you may anchor to the south of it in the depth of water which suits the vessel's draught, in the knowledge that, at nearly a mile and a half from the town and moles, you will have 4½ fathoms. In all the way here pointed out, you will have from 6 to 7 fathoms of water, and, therefore, the lead will aid to prevent any mistake in the bearings.

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* I know no English word that will express the meaning of *Barrancas;* but it is exactly given in the Scotish word *Scaur*. Vide the 'Lay of the Last Minstrel,' Canto I.

"Is it the roar of Teviot's tide,
That chafes against the *scaur's* red side?"

Barrancas and scaurs mean a place from which the earth has been washed, or fallen away, so as to form a kind of gully or scar on the face of a hill, bank of a river, &c. The spot, showing the natural colour of the soil, being, of course, destitute of vegetation.——*A. Livingston.*

The

The entrance of this bay is easy to take; for, almost every day, there are shifts of wind from the S.E. and S.W. quarters, which blow from a little before mid-day until night-fall.

The Bay of Pensacola, as shown by the Charts, is an extensive inlet, entirely land-locked. Several rivers fall into it, of which the largest, called the *Escambia*, is navigable for shallops, but to the distance of a few miles only.

The town or city of Pensacola, now the capital of the county of Escambia, is situate on a plain, and defended by a fort on a sand-hill, close under which all vessels must pass to the town. It lies along the beach of the bay, is of an oblong form, and contains some spacious and elegant buildings.

Mr. Gauld has observed that, on the coast hereabout, he observed a stronger current in the winter-time than in the summer, "occasioned by prevailing N.W. and N.N.W. winds, which immediately cause a general ebb from all the bays and inlets on the coast, and sets to the eastward a point or two off-shore, at which season a southerly wind, which is a dead wind on the coast, is the forerunner of a N.W. wind in a few hours; so I would advise no one, knowing themselves to be to the westward of Cape St. Blas, to haul from the land, farther than in 17 or 16 fathoms of water, lest they should not be able to get the land on board again, from the above-described current and N.W. winds."*

PENSACOLA, EASTWARD.—The ISLAND of SANTA ROSA extends along the coast above 40 miles; but its greatest breadth does not exceed half a mile: there are many hillocks of white sand upon it, and some scattered trees. The eastern extremity of the island, which is the west point of the entrance of the Bay of SANTA ROSA, is a very low sandy point. The eastern point of the entrance of this bay may be known by some barrancas, or broken cliffs, of a bright red colour, which are upon it. The channel or mouth of the bay is very narrow, and has a bar, on which the depth is only from 6 to 7 feet. The entrance over the bar must be made with the prow to the N. by W., keeping in the middle of the channel until you pass the extreme east point of Santa Rosa Island, when, altering course to N.W., you may anchor as soon as you are sheltered. This bay is of extraordinary extent, being about 24 miles in length, to the eastward, and from 4 to 6 miles broad. The greatest depth in it is 3 fathoms, which are found only when you are to the west of the ravines, or red bluff, at the entrance; that is to say, at the distance of about 2 miles within the bar. The rest of the bay is full of shoals and old trees or stumps, so as merely to be passable for canoes.

FROM THE BAY OF SANTA ROSA, the coast trends E.S.E. and S.E. by E. for 48 miles, to the entrance of the BAY of SAN ANDRE', or ST. ANDREW: on the coast, between, the trees are very thick, and close to the shore; there are also various hillocks of red and of white sand. The entrance of the bay is formed to the west by a long narrow tongue of land, which extends from the main land, and to the east by a little island, named *San André*; a shoal extends from the tongue, and extends across more than two-thirds of the distance between it and the island, leaving a channel, with a bar, on which there is about 10 feet of water. You must also give a berth to another shoal, which extends from the island; and, being past it, and between the points, steer to the N.W., to take the shelter of the tongue, in 4 or 5 fathoms. This bay is very large; but as, to the present time, there is no motive for vessels going to it, except for temporary shelter, they may remain in the place we have assigned, without any necessity for going farther in.

FROM THE BAR OF SAN ANDRE', the coast follows to the S.S.E., for 28 miles, to CAPE ST. BLAS, which is the southern point of a long tongue of land, that, at 4 or 5 miles from the inner coast, forms the Bay of ~~San Josef~~, or St. Joseph. From the Island of San André, a sand-bank, with only 4 feet of water on it, extends in the same direction of S.S.E., 10 miles. This shoal, which may easily be discovered, from the water's turning white on it, extends about a league and a half from the inner coast. The S.E. extremity of this bank, with the point of the tongue, form the entrance of the Bay of San Josef, which has a bar of only 3 feet of water on it. This tongue of land, which is 15 miles long, is so narrow, that, in some places, its breadth is not more than two cables' length: there are various breaks in it, by which, during storms, the waters of the sea

* But see, farther, the General Directions for the Mexican Sea, hereafter.

join

join those of the bay; and there is some wood on it. This piece of coast presents good anchorage, sheltered from the east winds, in 6 and 7 fathoms of water, which you will gain at a mile and a half from the shore.

To enter by the Bar of St. Joseph, it is necessary to coast the tongue of land, in 4 or 5 fathoms, until you pass a small tongue of sand, which lies a little way without the mouth: thence you must steer N.E. and E.N.E. for the interior, coasting always along the tongue, near which is the deepest water. There is always a swell on the bar. This bay is entirely unsheltered, especially in the winter, when the winds prevail from the S.W. and N.W. quarters, and raise much sea, in addition to the usual swell on the bar.

CAPE ST. BLAS is a low point, which trends to the S. by E. about 2 miles. From the woody part of this point a sand-bank extends to S.S.E. to the distance of more than 3 miles; there are, also, from the S.S.E. to the S.S.W. of the point, various shoal spots, or small sand-banks, which have not above 3½ fathoms over them; the southernmost of the whole of them lies 4 leagues from the point. Between these spots there are channels with 7, 8, and 9, fathoms of water.*

The Coast from the Missisipi to Cape St. Blas, in general.

All the coast, from the Missisipi to Cape San Blas, has soundings off it, the edge of which descend to 28° 50′ of latitude; but the depth is very unequal, as you may see by a glance at the Chart. Notwithstanding this inequality, it is very clean; for, if you except the spots of sand in the vicinity of Cape San Blas, there is no danger but what may be avoided by attention to the lead: but, as all the land is very low, and deficient in marks to distinguish it by, along its whole extent, and, as it is also frequently obscured by showers and fogs, and much exposed to the winds of the S.E. and S.W. quarters, which blow with much force in the winter, and to the hurricanes which are experienced in August and September; it becomes necessary to say something of the general mode of making it, and of navigating upon it.

GENERAL INSTRUCTIONS for Sailing towards the Missisipi, Mobile, and Pensacola.

There *are only three points* on this coast to which vessels are generally bound; that is to say, the *Balize Pass of the Missisipi, Mobile,* and *Pensacola:* for the bays of *Sta Rosa, San Andrès,* and *San Josef,* have neither towns nor commerce. To direct yourself to any of these ports from points to the S.E. of them, it is adviseable to make the land well to the eastward of their respective meridians, that you may find them on the western tack, with the winds from the eastward, which are the prevailing ones; but, if you approach from the west, you have no other resource than to beat to windward from the part of the coast you make, at a greater or less distance from it, according to the season, the size and qualities of the vessels, &c.

It is necessary to make the land, more or less to the eastward of your place of destination, according to the confidence or the certainty you have of the situation of the vessel, and thus either to strike soundings on the meridian of Mobile, when bound to the Missisipi, in order to ascertain your exact situation, or to strike them on the meridian of Cape San Blas, when bound to Mobile or Pensacola.

Having obtained soundings in the latitude of 29°, you must steer to the West, if bound to the Balize, so as to make land to the eastward of it, or something to the

* Cape St. Blas.—The longitude of this point has been variously represented. In Mr. Gauld's Survey of the Coast of West Florida, it is given in 86° 5′ W. In Mr. Faden's Chart of the West-Indies, 1808, in 86° 2′. In a Chart by Mr. Arrowsmith, 1809, in only 85° 6′. In the Spanish Chart of 1808, it is given in 85° 15′; but in that of 1799, in 85° 36′. We have compared these with the differences given in several other maps and charts, and while we regret the want of more positive information, are of opinion that the chart of 1799, in this respect, approximates nearest to the truth. Upon this consideration, we have placed it, in our new Chart of the Gulf of Mexico, in 85° 36′ West.

north,

north, that you may not fall from its parallel, in the event of the wind's being from that quarter.

From April to June, inclusive, you may run westward on the parallel of the Balize; but in the winter you ought to direct your course towards the middle of the Chandeleur Islands. On this route you will not find the soundings regular: for, whatever may be the parallel you run in, you will as soon get more water as fall into less; nevertheless, from 20 fathoms into less depth, there is much regularity; and, from the meridian of Pensacola, as far as the southern limit of the Chandeleurs, you will have 10 fathoms at 10 miles from the coast; and, from that depth, will be in sight of the coast. From Pensacola to the eastward, you will have 10 fathoms at 4 miles from the coast.

But, in navigating for the Balize, you may not be able to obtain observations for the latitude, and fogs or rain may hinder you from recognizing the coast; under such circumstances, or, in case of its answering to make the coast by night, the deep-sea lead is a sure guide to direct yourself by: for this you must keep in mind, that if, in steering to the west, you catch from 40 to 50 fathoms, loose sticky mud, mixed at times with a little black or white sand, it will be a certain sign that you are on the parallel of the Balize, and from that depth, into less water, you will always find the same quality of soundings; but if, from 40 to 50 fathoms into less water, you find the bottom of small sand with very little clay, or without it, you will be between the Balize and Cayo Breton; if small white sand, you will be in the parallel of that Kay; if coarse sand, with small shells, (like snail-shells,) you will be between the said Kay and the Chandeleurs; and, if coarse sand, with gravel, small stones, and large shells, you will be in front of these islands.

From the Balize, towards the west, the bottom is generally of sand alone; and, for those bound to the Balize from the southward, it will be a sign that they are to the west of it when steering to the N.W. and North, after they catch 40 or 50 fathoms, on sand, and diminishing the depth, the quality of the bottom does not vary until they are in 12 or 10 fathoms: but if, on their route, they have crossed over clay, and, on entering into 10 or 12 fathoms, find sand again, it will be a sign that they have passed or crossed the mouth of the Balize, and are approaching Cayo Breton and the Chandeleur Islands.

When bound to the Balize, whether upon its own parallel, or upon that of the Chandeleurs, it is adviseable not to entangle yourself with the land in the night, unless you are very certain of your situation, but rather come to an anchor, in 15 or 20 fathoms, until day-light; but he who does not wish to retard his passage, or subject himself to the delays which an *on-shore* wind might occasion, may run until on the stretch towards the Balize, to anchor outside the bar, in 8 or 10 fathoms, firing some guns as he runs in; so that, when they are answered from the Balize, he may observe their flash or report, which will enable him to be more certain in taking the right anchorage.* But, if you have fallen in near the Chandeleurs, so soon as you are in 10 fathoms, steer S. by W. ½ W. [*S. S. W.*] for the Balize, taking care to keep in that depth, by which you will incur no danger, either of getting ashore or among shoals: on this way the soundings afford good marks for knowing the vessel's place; for, so soon as you are abreast of the Grand Gosier, or southern extremity of the Chandeleurs, you will begin to augment the depth from 12 and 14, to 18, fathoms, which latter will be when you are crossing the pit or well *(La Toza)*: this augmentation ceases so soon as you are off Passe a l'Outre, when you will again have the 10 fathoms. The knowledge of this is of importance, for finding the Balize with certainty, and to keep from falling to the south of it.

If, in this anchorage, you catch the wind strong from S.E., so that it will not allow you to enter over the bar, it will be best to get under sail in plenty of time, and run yourself clear to the southward of the Passes; for, at anchor with this wind, in the expectation of riding it out, there will be the greatest risk of losing the anchor you have down, and all the others which you may let go; and you also run the risk of not being able to clear the land of the Passes, and of getting ashore and being wrecked on it; but, when you get under sail, so as to be able to heave-to for the gale, you ought, so soon as ever you perceive the wind tacking round for the S.W. quarter, to turn towards the shore; for, if you do not, the north wind will enter with violence, and you will remain

* The lighthouse, erected since these directions were composed, will clearly obviate all difficulty in making out the Bar, if the weather be clear. See page 185.

to leeward, and find it very difficult to gain the coast. If the north wind should catch you, when crossing from the Chandeleurs to the Balize, you ought to lose no time in clearing yourself, which will be effected when you are round the Balize; and this latter will be so soon as you are to the southward of 29° of latitude; for then, when the tack-out is not favourable, the other will be gaining to the eastward, and, while you are thus situated, the wind may probably take to the N.W. quarter, when you will be in no more danger of being driven upon the coast. While doing this, you must take care not to get into less than 10 fathoms, when you are on the board either to the S.E. or S.W.; for, from that water into less, you would not round the Balize; and if you get into less depth, and the wind continues, or increases, shipwreck will be unavoidable, as you will not have it in your power to steer to the North to take shelter in *Naso Anchorage*, which has been described in page 192.

If, being in 10 fathoms, and without appearance of the gale ceasing, and seeing that you are getting into less depth, and can steer to the North, sounding continually, keep all along in 8 or 10 fathoms of depth, and thus you will coast along the Chandeleurs. You may know when you are past the northernmost of these isles by losing the bottom of clay, and sometimes white shells, which is opposite the Chandeleurs, and gain fine white and black sand; you may then steer to the West, in 10, 8, and 6, fathoms, in order to anchor in the shelter of them, in the ground which we have already described. As the thickness of the atmosphere, in such circumstances, does not permit any thing to be seen, you can have no other guide to this anchorage than the lead; but, if you can see the land, you may run in easier, because you have no more to do than round the head of the sand-spit, which runs out to the N.E. of the northernmost Chandeleur, and on which the sea breaks with much noise. This opportune resource, which, in general, only concerns vessels of small burthen, it will be best to have recourse to so soon as it is thought that it would be difficult to round the Balize, and that those accidents may be avoided which are occasioned by the carrying of much sail, (or a press of canvas,) with much wind and a heavy sea. But even those vessels which, on account of their great draught of water, remain exposed to the elements, may, in case of having got into 10 fathoms, with a probability of not being able to weather the Balize, can and ought to take the above-stated route; taking care to anchor in Naso Road, in a sufficient depth of water, not only for the draught of the vessel, but that it may not touch in the hollows of the sea, managing altogether in seaman-like style, with the hope that, if the anchors fix themselves well in the hard clay, which is in the anchorage, while the sea becomes less rough, from the breakwater which the spit from the Chandeleurs forms, it may not be difficult to save the vessel from shipwreck, so long as the cables hold; but mark that, so soon as the wind rounds to the N.W. quarter, you should weigh without delay, and get out; for, in this place, the sea rises with winds both of the S.E. and S.W. quadrants, but falls 2 or 3 feet, with winds of the N.W. and N.E.

If bound to Pensacola or Mobile, you ought to make the land to the east of them, not only to avoid passing them, but because there are so few distinguishing marks on this coast, that, in running along, it is the only guide to any one who has never before been on it: nevertheless the lead indicates pretty well, within a little over or under the meridian in which the vessel is, if the following precaution be attended to; that is to say, that when coarse sand, with coral, is found out of sight of land, it is a certain indication that you are opposite the eastern head or end of Santa Rosa Island; for that quality of soundings is found only in that part; and, although they also have it at the River Tampa and other parts of East-Florida, this can cause no mistake, because these points are too remote.

From the meridian of the Bay of Santa Rosa to the west, the lead finds only fine sand, with black specks, like gunpowder, and red particles; and, diminishing the water from 18 fathoms, you will enter on very fine sand of a rose-colour, with some pieces of white shells, and bits of black stones, which quality of bottom is very remarkable, as it is found only to the S.E. and South of Pensacola: with this ground, and by shoaling the water to 14 fathoms, you will discover the harbour at the distance of about 5 leagues. You may also find the port by the depth of water; for, as we have said, the depth of water from Pensacola to the east augments, so that you get 10 fathoms at four miles from the shore; but from Pensacola to the west it *decreases*, and you gain the same depth at 10 miles off shore.

Those who are approaching Mobile, ought to keep in mind the necessity of getting clear out so soon as the wind appears to be coming on shore, whether they clear themselves

selves by weathering the Balize, or, which is better, by taking in time the shelter of Naso Road, as we have already explained; for, outside of Mobile Bar, no one can keep at anchor in such winds, as the cables must inevitably fail, and the vessel be lost.

Those who are off Pensacola Bay ought equally to make sail, and get clear so soon as the wind seems to be coming to blow on shore; and they may, in general, count on weathering the Balize; as, by steering S.W. they will go clear of it. To attempt remaining off the Bar is as unsafe as at Mobile.

COAST OF EAST FLORIDA.

From Cape St. Blas follows, to the east, the *Island of St. Dionisio*, and next that of *St. George:* the latter, from its southernmost point, which is 15 miles distant from the Cape, trends to the N.E. by E., and, in the same direction, there are three other isles. At nearly E.N.E. from the last, is the *South-west Cape*, on the western side of Apalaché Bay; which is the *Point Meneses* of the Spanish charts.

APALACHE'.—From the S.W. Cape the coast sweeps to the north, and thence to the east, forming a great bight, in the north part of which the River Apalaché disembogues: this river has little water, and is obstructed by oyster-banks, which remain dry at low water. The tide rises about 4½ feet, at about a league from the entrance.* Fort San Marcos (St. Mark's) is three leagues up the river, and stands on a point formed at the confluence of two streams; the western one of which is called by the Spaniards *Tagabona*, and the eastern *Santiago*. The shallow water of the river is not found at the entrance of it only, but also in all the Great Bay; for, from the S.W. Cape, or Point Meneses, to the north, no more than 2 fathoms is found.

On the east of the eastern side of the entrance of Apalaché, named *Casinas*, a rocky reef extends out about 2 miles, and the coast from that point follows in a curve ~~to N. 69° E. true~~, 33 miles, to the N.W. Point of Deadman's Bay *(Hombré Muerto)*. In the intermediate space, near the shore, are the two Rocky Isles *(Piedras)*, and Pine's Point. The water along the coast is very shallow, with only one and two fathoms

Deadman's Bay has an opening of 8 miles between its N.W. and S.E. points, and is 5 miles deep. The Rio de S. Pedro falls into it. To the south of the S.E. point of the bay, are two little islets, at the distance of 2 miles.

At *S.* 46° *E. true*, 34 miles, from the N.W. point of Deadman's Bay, is the River Sawaney or River of St. Juan; the mouth of which is obstructed by a great number of islets. On the intermediate coast are three islets, the largest of which is called *Coler*.† Farther to the S.E. is another groupe. The land between forms a bay.

From the River Sawaney to the southward the water is very shallow, and the coast so low that it cannot be seen: in place of it you may discover some very low kays or islets, named the *Savinas*, or *Sabines*, which were examined, in 1802, by the merchant-pilot Josef Vidal. The south-westernmost is situate in lat. 29° 4′. This groupe is composed of nine principal islets, with many others, occupying a space of 21 miles from W.N.W. to E.S.E, and 14 from North to South. They are all surrounded by banks, which extend far out to sea; for, from the western islet, the bank runs out 12 miles to the W.S.W., and, from the southern, 14 miles to the southward. Between the islets and banks are channels of varying depths, with from 3 to 12 feet of water. Vidal anchored to the east of the south-westernmost kay, in 12 feet.

Fifty miles to the southward of the northern part of the Sabines lies *Anclote Kay*, or rather Kays, a little before arriving at which the coast again shows itself. All the sea between the S.W. Cape of Apalaché and Anclote Kay is so shallow, that you may find 6, 5, 4, and 3, fathoms, at 8 and 10 miles from the land. The Kay is 4 miles distant from the coast, is about eight miles in length from North to South, and is divided into three parts as represented on the chart.

* In 1828 a grant was passed for a lighthouse, to be erected on a proper site, near St. Mark's or Apalaché Harbour, but the exact situation was not described.

† These, we presume, are the Cabbage Isles of the English charts.—Edit.

Off the south part of the Anclote Kays, abreast of St. Clement's Point, there is good anchorage in 3 fathoms.

The Coast extends hence S.E. by S. 11 leagues, to Tampa or Spiritu Santo Bay. The coast about this bay, which is bordered with isles and kays, is cleaner and deeper than the former part; for here you may find 6 fathoms, at 3 leagues from the shore, and there is no difficulty in running along it, with the lead kept going.

TAMPA BAY has sufficient depth for ships; for there is within it 5 and 6 fathoms of water; and, although its entrance has a bar, the least water is from 2½ to 3½ fathoms. The entrance of this bay is obstructed by several sand-banks, upon which rise some inlets: between these shoals are the channels named the *West*, the *South-west*, and the *South-east:* the first two have plenty of water on their bars, for the first has 3½ fathoms, and the second 3 fathoms: the channels are clear, and, to take them, there is little necessity for instructions; for you can easily see the shoals at high water, and, at low water, they are dry.

The description of Spiritu Santo, or Tampa Bay, as given by Mr. Romans, &c. is as follows:—

This harbour is very capacious, and is well calculated for a place of refreshment. It abounds with wood, fresh water, fish, oysters, clams, large and small water-fowls, deer, turkeys, &c. It is formed by a range of narrow islands lying before it, the southernmost of which is named, according to a late chart, *Alarm Graves Island*, of which the north end is called *Grant's Point*. Its latitude is 27° 37′. The next island, lying one mile and a half north of it, is called *Pollux Kay;* and another, which is far the larger, about the same distance to the N.W. by N. of that, is called *Castor Kay:* these names were given from two privateers, one of which was commanded by Captain Braddock, of Virginia: these two vessels cruized hereabout in the years 1744 and 1745; and Captain Braddock is generally acknowledged to be the first Englishman who explored this Bay. Northward of Castor Kay, by some called *Egmont Isle*, is a cluster of little islands, called *Mullet Kays;* they lie about two miles to the N.E. from Castor Kay, and a shoal extends from each to the westward: to that which runs off from the Mullet Kays, the Spaniards have given the name of *Restinga Larga:* the people of the country resort to these kays for the purpose of fishing; and have built huts on the principal of them, where there are also wells of fresh water.

The kays and shoals form three entrances into the Bay; viz. one between Grant's Point and Pollux Kay; another between Castor and Pollux Kay; and the third, called by the Spaniards *Boca Grande*, being the principal entrance, lies between Castor Kay and the Mullets.

The coast has pretty regular soundings, but not very deep. To enter this harbour by any of its inlets, observe the following directions, and they hardly can fail of carrying you in safely.

The land is low, and not visible till you are within about 8 miles from it, where you will have about 6 or 6½ fathoms of water; the chief productions of the kays are mangrove and blackwood bushes.

To enter by Grant's Point, bring it to bear N.E. ¾ E., then run in on that course till the south end of Pollux Kay bears N.E. ½ N., when you will be on the bar of this inlet, and there find 16 feet of water: this bar being short, you must run in on the same course till you are nearly abreast of Pollux Kay, and you will have 3, 4, and 5, fathoms: when you are almost abreast of the kay, steer East, and you may run in as the Chart directs.

To run in between Castor and Pollux Kays, keep in about 5 fathoms, till you bring the north end of Pollux to bear about E. by N. ¼ E.; then run on in that course, till the south end of Castor bears N.E. by E. ½ E. and you will presently be in about 17 feet; then steer about E.N.E. directly for the midway between the two kays, and you will continue for about three-quarters of a mile in 16 or 17 feet, shoalest under the north bank; when you are over this, you will have 3½ or 4 fathoms, and, by keeping a little to the northward of the last course, after you have cleared the kays, you may run up the bay without any hesitation.

To go in through the principal inlet, or between the Mullet and Castor Kays, you must run in about 5 fathoms, till you bring the south part of the Mullet Kays to bear E. ½ S.; then sail on that course till the north end of Castor Kay bears E. by S. ½ S. and you will find

find 22 or 23 feet of water; steer on the same course until you deepen your water to 6 fathoms; then run East, inclining to the south shore, if any. So soon as you have doubled Castor Kay, you may anchor under it, or run up by the Mullet Kays, or farther in, as the Chart points out.

In 1769, Mr. Romans was employed above six weeks in surveying this harbour, and, his boat having sunk in Manatie River, he proceeded thence on foot across the peninsula to St. Augustin.

From Tampa Bay the coast continues to the S.E. by E., 22 leagues, to Carlos Bay or Charlotte Harbour: there are several kays extending along this coast, a part of which lies out nearly 4 miles from it. The shore is all clean, with the exception of a sand-bar extending out from what is called the *Boca*, or Mouth, of *Sarasota Inlet*, which is an opening formed by two of the longer kays, and which is 7 leagues distant from Tampa Bay: Upon this bar there are 2 fathoms of water; and along the whole coast 4 and 5 fathoms are found at 5 and 6 miles from the shore. There is no danger in running along it with the lead kept going.

CARLOS BAY is a considerable estuary made by the coast, and into which several rivers empty themselves; the mouth of it is covered by numerous kays and shoals, which have between them wider or narrower channels. The northernmost one, named Gasparillo Inlet, has only 6 feet of water; that which follows, called *Boca Grande* or *Great Inlet*, is deeper, having 14 feet in it, and it is a mile in width; to the south of this there is another, named *Cautiva*, with 7 feet of water. This bay is useful to vessels only which do not draw more than 8 feet, as it affords little shelter from the winter-storms; and, although the bottom is good, the anchors cannot hold, unless you seek the lee parts of the bay, according to the wind that blows. The tides here rise 2 feet; and, when the wind is off shore, there is such a force of water at the entrance of the bay, that you ought not to attempt it, but wait for a better opportunity.

The kay, of which the northern extremity forms the *Boca Cautiva*, or Slave Inlet, is the same of which the south end forms *Boca Seca*, or Dry Inlet, which is an opening between that kay to the north and *Sanibel Isle* to the south. This opening communicates with a shallow lagoon, which also communicates with Carlos Bay by some shallow channels. There is good anchorage at the south part of Sanibel Isle, in 2 fathoms of water, and sufficiently sheltered from all winds. This anchorage of Sanibel may be known by a grove of palm-trees, which is about 2 miles to the south of it, and which is the only grove to be seen on all the coast. Much caution is requisite in going to Sanibel anchorage; and the lead should be kept constantly going, in order to avoid the shoals which run out from Sanibel, as well as from the kays to the S.E. of it, and which extend off to sea about 4 miles.

Mr. Romans has described Carlos Bay as affording, not only good shelter, but excellent water in many places, especially on a high island, whose north end is a broken bluff, and which shows itself remarkably to those who have well shot it; there is, likewise, plenty of fish, and the islands are stocked with deer.

From the islets above mentioned the coast trends S.S.E., nearly 11 leagues, to *Punta Larga*, or *Cape Roman*. The ground all along is very clean, and there are 3 fathoms at 2 miles from the shore. From Punta Larga a shoal extends to the South and S.W. about 7 miles; and this, with the coast to the east, forms a bay, with 2 fathoms of water, in which vessels, of light draught, may find shelter from winds of the N.E. and N.W. quarters.

The BAY of JUAN PONCE de LEON, by the English called Chatham Bay, is comprised between Punta Larga, or Cape Roman, and Punta Tancha, or Sable Point, the southernmost point of Florida. The distance between the two points is 19 leagues. The ground generally clean; but as the depth of water is very small, and the coast lined with shoals, the bay is very little frequented, except by turtles and fishermen.

Tides, &c. on the Western Coasts of Florida.

In the vicinity of Punta Tancha, or Sable Point, and thence to Punta Larga, or Cape Roman, the sea runs tide and half-tide, in the same manner as at Plymouth, the Needles, and the Isle of Wight, in England; that is to say, three hours flood, then three hours ebb; next nine hours flood; and lastly, nine hours ebb: it does not rise to an equal height

height in all places, nor does it run equally rapid in every part: in some places you shall meet it in a mere fall; and, in almost every gut, among the many islands in this bay, you will find it as much as four stout men can do to stem the current with a moses.

From Cape Roman, northward and westward, the tide seems to ebb and flow once in twenty-four hours; but, it being very much governed by the winds, this happens very irregularly; for, with a South, or S.W., or West wind, it will flow much longer than it will fall; whereas, with a North, or N.E., or East wind, it will ebb much longer than it will rise. Consequently, it happens frequently, that, at the time of springs, you find less water on a bar than at neap-tides, and *vice versa*. The tide has not been observed to rise above two feet any where, at the highest times; yet its effects on the currents of the rivers are, in dry summers, very visible at a great way from the sea.

The VARIATION of the COMPASS, within the limits described in this section, is from 6½ to 5½ degrees East. Mr. Gauld, in 1770, gave it as 6° 37′ East, near the entrance of the Missisipi: Mr. Romans, nearly at the same time, gave it as 5° 47′ East, near Tampa Bay; and, from observations made farther to the southward, in 1807, it may be inferred to be, at present, nearly the same, or a very little more.

THE TORTUGAS SOUNDINGS.

THE great bank, which extends, in some parts, 40 leagues from shore, between Cape St. Blas on the north, and the Florida Kays to the south, is generally denominated the TORTUGAS SOUNDINGS. The ground is clean and mostly of sand, there being no known danger, except a spot of sand, which is in latitude 28° 35′, and about 12 minutes to the east of the meridian of Cape St. Blas, and on which there is scarcely 3 feet of water, though it is so steep that, from 100 fathoms you are aground at once.* The whole of the rest of the bottom of these soundings is very regular, and the depth lessens gradually towards the land; upon it there is good shelter from the North and N.E. sea or swell; and a vessel, commodiously, may lie-to upon the bank, observing only that the less the depth the less the swell will be, and that even, without much inconvenience, an anchor may be let go in 8 or 10 fathoms.

When entering upon this bank from the southward, without being certain of the latitude, and being near the parallel of the Tortugas, (or 24° 30′,) the western part of which is very steep, it is most necessary to run with caution, in order to catch the soundings on the edge of the bank, and not to go into less than 40 or 35 fathoms: this is the best precaution for keeping you clear of the Tortugas, around which are 30 fathoms. The same precaution, of not getting into less than 40 or 35 fathoms; ought to be attended to when entering upon the bank from the northward, or on higher parallels, and thence steering to it by its southern edge. This will be sufficient to keep you clear, in any circumstances, from all danger of the Tortugas.

On the edge of the Tortugas Soundings the waters run with some strength towards the south; and thus, on entering from the westward, with the intention of ascertaining your position by and on them, and your passage is much retarded by winds from the N.E., E.N.E., or East, you may be sure that you are on the edge of them, if you find, for two succeeding days, differences of latitude of 20 miles or more, to the south of your reckoning: in which case you may consider yourself on the meridian of the edge, reckoning that by this you will not incur an error of more than 10 leagues, and you may prosecute your voyage or route with security.

THE TORTUGAS AND MARTYRS, OR FLORIDA KAYS AND REEFS.

THE great chains of islets, kays, reefs, and shoals, which are now called the TORTUGAS and MARTYRS, or FLORIDA KAYS AND REEFS, are supposed to have constituted, in

* In Captain Romans' Chart of the Gulf, this shoal is described as a "*little sandy kay, seen by Captain George Ross, in the Providence schooner; no ground at* 100 *fathoms.* In this Chart it is represented in latitude 28° 37′, and 13 minutes east of the meridian of Cape St. Blas. We cannot help entertaining much doubt as to its existence. A small shoal of *sand, in such a situation*, must, indeed, be considered as a phenomenon.—EDITOR.

former

former ages, only five or six islands, which have been since broken, and gradually separated, into innumerable smaller ones, by the operation of the Florida-Stream and the encroachment of the sea.

The first description of these reefs, &c. worthy of particular notice, is that of Mr. De Brahm, surveyor-general of the southern district of North-America, who was employed here from the year 1765 to that of 1771: This description was, however, very superficial and very erroneous. The most precise and valuable detail is that of George Gauld, Esq. by whom the whole was surveyed, under the order of the Lords Commissioners of the Admiralty, in the years 1773, 4, and 5; and to the latter gentleman, chiefly, we are indebted for the following description:

The TORTUGAS.—The Tortugas, or Dry Tortugas, consist of ten small islands or kays, existing as depicted on the Charts, upon several flats of sand, coral, and rocky ground. These flats extend about 11 miles in an E.N.E. and W.S.W. direction.—The Middle Kay appears to lie in latitude 24° 3½′, and in longitude, from Greenwich, 82° 58′ West.

To the west of the Tortugas is the Tortugas Bank, extending 9 miles from North to South, by nearly 6 from East to West. It is a large bank of brown coral-rocks, intermixed with patches of white sand, and having very irregular soundings of from 5½ to 12 fathoms. Its shoalest part is near the southern extremity, in latitude 24° 28′, and longitude 83° 11′. Between this bank and the flats of the Dry Tortugas there is a channel about a league in breadth, and having, in general, from 10 to 20 fathoms, sand, gravel, coral, and shells.*

The islets or kays called the Dry Tortugas are all very low, but some of them are covered with mangrove-bushes, and may be seen at the distance of four leagues. The S.W. Kay lies in latitude 24° 32½′, and longitude about 83° 4′.† The variation here, during Mr. Gauld's survey, by a medium of several observations, appeared to be 7 degrees East. It now appears to be one degree more. A reef of coral rocks stretches about a quarter of a mile S.W. from this kay, the water on which is discoloured; and, in general, wherever there is danger, it may be easily seen, in the day-time, from the mast-head.

Lighthouse.—*Bush or Garden Kay* is now distinguished by a lighthouse, which exhibits a brilliant fixed light, between 60 and 70 feet above the sea, which may be seen at the distance of 18 miles. According to the official notice, it may be approached on the west, south, and round to east, within 4 miles, without danger. On the north, it should not be approached nearer than to 9 miles.

The "*American Coast Pilot*," says, that a spar-buoy, painted white, in 15 or 18 feet of water, and showing 3 feet above the water, has been placed on the west end of the quick-sands of the Tortugas, at 15 miles E. ½ S. from the eastern kay, and where there is a shoal of not more than 7 or 8 feet of water. Too much dependence should not, however, be placed on seeing it; as, from its exposed situation, it is very likely to drift from its place.

To the southward of the Tortugas, the soundings appear to be very regular, until within 8 leagues of the shore, where, in some places, they become uneven. To the northward of them is fine deep water. In passing by, in the night, it is necessary to sound frequently, and never to stand into less than 30 or 35 fathoms.

There is no drinkable water to be obtained on any of the Tortugas, except on the northernmost island: but there is a great variety of sea-birds, with turtle and excellent fish.

If bound to the eastward, and you meet with a strong easterly gale, which is frequent hereabout in the summer-season, you may safely come to anchor, in 5 or 6 fathoms,

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* Although, from the clearness of the water on this bank, it appears dangerous, it is not so in reality. Those bound to the eastward, from any port in the Mexican Sea, and meeting with a fierce storm hereabout, which is very common in the summer season, may safely anchor in 5 or 6 fathoms, to the north of the S.W. kay, at the distance of one-quarter of a mile from the west side of the long sandy kay called Turtle Kay.

† Don Dionisio Galliano, from his observations on the Northern Kay, assigned to the S.W. Kay, latitude 24° 32′ 30″, and longitude 82° 56′ 16″.

under

under the lee of the long sandy island which lies to the northward of the S.W. kay, at about a quarter of a mile from shore.

The BANK of SOUNDINGS extends 5 or 6 leagues to the southward of the Tortugas, but much farther to westward and northward, all the way along the shore of Florida. This is an advantageous circumstance to navigation, as caution in sounding may prevent any danger in the night-time; for the soundings are extremely regular all along this bank to the northward, almost to Cape St. Blas, or latitude 29° 40′; so that, by the latitude and depth of water, it may be, in general, known how far a ship is to the eastward or westward. From 20 to 50 fathoms there is a space of several leagues, but from 50 to 60 it deepens fast to 70 and 80, and soon after to no ground.

CHANNEL EAST of the TORTUGAS.—Over the bank, to the eastward of the Tortugas, there is a broad channel of 10 to 17 fathoms, through which vessels may pass and save much in distance, when going to and from the coast of Florida, &c. But this passage is not to be attempted unless the Tortugas are previously and distinctly seen, and unless you keep within two or three leagues of the easternmost of them; as there is a coral-bank, of only 12 feet of water, at the distance of between 4 and 5 leagues from them;* and, farther on, towards CAYO MARQUES, the westernmost of the Florida Kays, there is a very dangerous and extensive bank of quicksand, on many parts of which there are no more than 4 or 5 feet of water. This bank is of a remarkable white colour, and may be easily seen and avoided in the day-time.

CAYO MARQUES, or MARQUES KAY, the westernmost of the range of Florida Kays, lies about *E.* ¼ *S.*, *true*, 14 leagues, from the S.W. Kay of the Tortugas, in latitude 24° 29′. In the vicinity is a cluster of mangrove islands. To the westward and northwestward of Cayo Marques, is a large bank of quicksand, extending 5 or 6 leagues; and nearly due South, from the S.W. extremity of this bank, lies the west end of the GENERAL FLORIDA REEF, in latitude 24° 22′, and longitude 82° 35½′. There is a channel between the Reef and the Bank, above mentioned, and likewise all along between it and the kays, which is, in many places, more than four miles in breadth.

The FLORIDA REEF, at the west end, is about 3 miles broad, but the least water on it is 5 fathoms; with irregular soundings from 7 to 8 fathoms. The water over it is all discoloured: the bottom plainly appears, with white and brown patches of coral rocks. The south side of the reef is steep, in general; there being from 30 to 29 fathoms, muddy bottom, within a mile or two of it.

In the channel, to the westward of Cayo Marques, there is a depth of 7 to 10 fathoms; and, on the reef, the least water is 3¼ fathoms. Abreast of Cayo Marques 7½ fathoms, soft mud, is the deepest water in the channel, and 3½ the least water on the reef.

The BOCA GRANDE, a large opening just to the eastward of Cayo Marques, is upwards of two miles in breadth, and has a channel through, to the northward, of which the shoalest part has 9 or 10 feet of water, but it is not to be recommended to strangers. The western side of it is distinguished by a large semi-circular kay, called the CAYO DE BOCA GRANDE, which is 5 miles in length.

KAY WEST, formerly CAYO HUESO.—This is the first island of consequence to the eastward of the KAY of BOCA GRANDE; the distance between is 6½ leagues. There are some scattered mangrove islands between Boca Grande and it, the three southernmost of which have white sandy beaches. Kay West is six miles in length, and has a sandy beach; under the government of the United States, it has become an important trading port, having a collector of customs, with appropriate warehouses, &c. The harbour admits mercantile vessels of the largest class, and they are protected from all winds within 200 yards of the N.W. point of the island. Several ponds, for nine months in the year, produce excellent fresh water. The trees are thick upon it, especially toward the west end, where there is anchorage and fresh water.

In 1828, five buoys were ordered to be laid down in the channel, between Kay West and the islands to the West and N.W. of it, communicating with the Mexican Sea, so as to facilitate the passage of vessels to the western ports of Florida.

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* It seems that on this reef the ship Rebecca, of New York, lost part of her cargo in 1820.—According to the Rebecca's Journal the reef lay 11 miles from the Tortugas: so that, in passing, it is adviseable to keep the Tortugas in sight from the deck, and at the distance of two or three leagues.

A light-

A lighthouse has also been erected on the S.W. end of the Kay, now called *White Heads*, it is similar to that of the Tortugas, and its elevation is 83½ feet. The channel to the harbour is now well buoyed, and the buoys generally show the greatest depth of water.*

In order to enter the Port, bring the lighthouse on Kay West to bear N.N.W. until that on Sand Kay bears W. ¼ S. Here you will enter on the edge of the reef. Pursuing your N.N.W. course, for a mile and a half, you will cross over the reef in 5 fathoms, and will have passed it when Sand Kay light bears W.S.W. Continuing your N.N.W. course half a league farther, you will have 6 fathoms, with *soft* ground, and should then change your course to N.W., for 3½ miles, until Fleemings Kay† (which is a small mangrove islet in the north-eastern part of the harbour) comes in sight. Run for the latter, and it will lead you into the middle of the harbour; in the upper part of which is the best anchorage. The best anchoring-ground is nearest to the East Bank; for there is some small coral near the middle and western parts of the harbour. This place was formerly frequented by the turtlers and wreckers from Providence, and likewise by the fishing-craft from the Havanna. Small vessels find it the more convenient, because there is a channel through the bank to the northward, leading to the coast of Florida.‡

The S.W. Point of Kay West is in latitude 24° 29′, longitude 81° 55′, and it lies nearly *N.* 14° *E., true,* 27 leagues from the Havanna. In passing, give it a berth of about three-quarters of a mile, that a rocky spit, which stretches from it, may be avoided.

At the east end of Kay West there is a small opening, called Boca Chica, which leads to innumerable mangrove isles, mostly very small. Nothing larger than a canoe can pass quite through over the shoals.

SAND KAY, or Porpoise Island.—The westernmost Kay on the Florida Reef, is now distinguished by a lighthouse. The light is 70 feet above the level of the sea, and *revolving;* it appears refulgent, or in its greatest lustre, once in 54 seconds. This is the best light on the coast, and stands on the reef at 8½ miles S.W. by S. from that on Kay West. There is a buoy to the westward of it, which denotes the danger of the *Dry Rocks,* and it lies in the best water.

The lighthouse has been stated to bear S. 21° W. [*S.* 28° *W.*] eight miles and seven-tenths from the west point of Thompson's Island: but it may be observed that, according to Mr. Gauld's survey, the true bearing and distance are S. 32° W. 7¼ miles only. At

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* Of these buoys, the outer one, *white,* showing 3 feet above water, lies on the reef, in 26 feet, bearing from White Head Lighthouse S.S.E. 5¼ miles, and from that on Sandy Kay E.N.E. ½ E. 5½ miles.

† *Cayo Canalette* of Gauld's Survey.

‡ This channel, between Kay West and the Mule or Mangrove Island Bank, admits vessels, drawing 12 feet of water, into the Mexican Sea. The passage is from half a mile to a mile in breadth; its length is eight miles, and its direction from N.N.W. ¼ W. to N.W. ¼ W. Directions for it have been printed, but they are inaccurate, and, therefore, useless. At Kay West a pilot for it may be readily found. The northern entrance is narrow, and from the best water the lighthouse on Kay West bears nearly S.E. ¼ E.

Mr. Romans says, that the rocky point of Kay West may be seen from a vessel in the Mexican Sea when in soundings of 16½ feet, before the Mangrove and Hueso Banks are seen to form the side of the channel: from hence they bring the rocky point a-head, in a S.S.E. direction, and follow that course, consulting eye and lead, until they shut up the two points of the first small bay, on the north side of Cayo Hueso, whence they may come to a safe anchorage, or stand S. by E. through Holburn Inlet into the Florida Stream.

In case a passage to the eastward, within the Florida Reef, be preferred, the rocky point of Cayo Hueso should be cleared by a south course of a full half mile; then draw up to the East along the south shores of Cayo Hueso, Cayo Samba, &c., and keep a sufficient offing, from the islands in general, parallel to the range of them all, consulting eye and lead. Thus, you will meet with the best water to anchor in, every evening; and may proceed as far as Cayo Biscayno or Cape Florida; whence, without difficulty, if the wind be westerly or southerly, they may run into the Florida Stream.

Mr. Romans says, that the tide, at the west end of Cayo Hueso, runs violently. An E.N.E. moon there makes high water; the rise and fall, or flood and ebb, is 3½ feet with neap-tide, and 6½ at full and change. In Egmont Channel, it floods, at times, from South to North five hours, and ebbs seven. At other times it floods seven hours moderately; so that a vessel, with a leading wind, may easily stem its current; but it ebbs five hours from North to South with violence, from the banks of Cayo Hueso, and sets over upon the shoal of the Mangrove Isles; so that a vessel, with a leading wind, cannot stand against it without danger.

The bar at the north end of the Egmont Channel, according to Mr. Gauld, has only 9 and 10 feet over it, at low water, and can therefore be passed only by vessels of small draught.

about three miles to the westward, there is a dry patch of rocks on the reef; and there is another at half that distance to the eastward. From thence there are 2 or 3 fathoms on the reef for about 4 miles to the eastward of the kay: but, with the lighthouse of Kay West bearing from N.N.W. ¾ W. to N.N.W. ¼ W., there is a fair channel over the reef, of 4½ and 5 fathoms.*

The CHANNEL WITHIN THE REEF, between BOCA GRANDE and KAY WEST, is, in general, from 2½ to 3 miles broad; and the deepest water is 6 or 7 fathoms, fine sand and clay. There are two or three patches of coral rocks, with 2½ and 3 fathoms of water, lying nearly in mid-channel, about S.S.E. from the west end of Kay West.

SAMBOES.—Three small sandy kays on the reef, bearing this name, lie at the distance of about 5½ miles S.S.E. from BOCA CHICA. Between the westernmost and middle one is a channel over the reef, of 4 fathoms, and there is another, of 3 fathoms, between the middle and easternmost one: but, for 8 miles to the eastward of these kays, the reef is broad and dangerous, there being dry rocks in some places; and, in general, it is full of sunken rocks, 4 or 6 feet under water, with crooked channels of 4, 6, and 7, fathoms between them.

SADDLE BLUFF.—Six miles to the eastward of Boca Chica, there is a small island with remarkable high bluff trees, which in most points of view, appears in shape of a saddle. It has an opening, at each end, into a large shallow bay, bordered with innumerable mangrove islands to the northward.

PINE ISLANDS.—At the distance of 6 leagues from the west end of Cayo Hueso, there are several large islands covered with pine-trees, which continue all the way to Bahia Honda, for the space of nearly 4 leagues farther on to the eastward; but those pine-islands are bordered with mangrove kays on the south, and there are several openings quite through to the northward, but so shallow as to be passable only in boats and canoes.

LOOE KAY, (so called from his Majesty's ship Looe being cast away there,) is a small sandy island on the reef, 7½ leagues from the west end of Cayo Hueso, 15½ from Cayo Marques, and 28 leagues to the eastward of the Tortugas. It lies in the latitude of 24° 30½′, and longitude 81° 31′ from Greenwich, but it is now distinguished by a *white tower,* 30 feet high, which appears, at a distance, like a lighthouse, but it has a black pole, with a ball on its top. At 4 or 5 miles eastward of Looe Kay is a buoy on the reef, in 4½ fathoms, showing the deepest water, opposite to Bahia Honda. The rocks run but a very little out from Looe Kay, and there is no kind of danger but what may be avoided in the day-time. The reef is very steep on the south side; for you have 20 fathoms within a mile of the kay, and 100 fathoms at about 2 leagues to the southward of it. There is a channel of 4 or 5 fathoms over the Reef, about a mile to the westward of the kay: but to the eastward of it, for 2 or 3 miles, you cannot depend on carrying more than 15 or 16 feet, although farther on to the eastward, for the distance of 5 leagues, you will have 3½, and in many places 4 and 5, fathoms, the least water on the reef.

BAHIA HONDA lies about 8 miles N.E. by compass from Looe Kay, in latitude 24° 35′. It has a large entrance, and a fair channel of 4 or 5 fathoms; but within the harbour it shoalens to 3½, 3, 2¾, and 2½, fathoms, and the bottom, in general, is rather hard rough ground. This place may be easily known by three islets on the west side of the entrance, and a large island on the east side, a mile long, with a sandy beach, remarkable for a number of tall palmetto-cabbage trees, the first of the kind you fall in with coming from the westward. This isle is therefore called CABBAGE-TREE ISLAND.

CAYOS DE VACCAS, or COW KAYS.—From Bahia Honda, to the west end of CAYO VACCAS, (the next considerable island proceeding to the eastward,) the distance is 3½ leagues. There are only a few small kays between; the body or thick cluster of islands, ending about Bahia Honda; which makes this almost vacant space the more remarkable.

CAYO SOMBRERO, &c.—About 5 miles South from the western part of Cayo Vaccas, there is a small sandy kay on the reef, called by the Spaniards CAYO SOMBRERO, in latitude 24° 34′, and longitude 81° 15′. This is the easternmost kay on the reef.

* The Holburn Inlet of Mr. De Brahm.

There

There are, in all, six kays on the reef; and, as they may serve as so many good land-marks, it is proper to know exactly where you are, in case of falling in with any of them; we have, therefore, in the preceding description, given the situation of each: viz. of Sand Kay, the Samboes, or three small kays off Boca Chica, Looe Kay, and Cayo Sombrero.

CHANNEL between CAYO HUESO, now KAY WEST, and CAYOS VACCAS.

It has already been noticed that there are two or three small coral patches, within 2½ or 3 fathoms of water, lying about 2½ miles S.S.E. from the west end of Kay West. There is a depth of 5 or 6 fathoms all round them; and they lie near the middle of the channel, which is there about 4½ miles broad. The channel continues to be 4 miles in breadth to the Samboes, or the three kays on the reef off Boca Chica. Here the reef grows broader, and the channel narrower, with 4 or 5 fathoms, the deepest water. In the narrowest part, which is about 5 miles to the westward of Looe Kay, the channel is only a mile and a half broad, and 3¾ fathoms is the deepest water. But, as you approach Looe Kay, the channel grows broader again, and deepens to 5, 6, and 7, fathoms, mud and clay. Abreast of Bahia Honda, the channel is 2½ miles broad, with the same soundings; and it continues about the same breadth as far as Cayos Vaccas. There are two general remarks concerning this channel, to westward of Cayos Vaccas, namely, that you will have 3 fathoms all the way, within a mile of the kays, and that you will always find the deepest water nearest the reef.

VACCAS, EASTWARD.—The Vaccas or Cows, or rather the thick range of isles that go by that name, extend about N.E. by E. for the space of 4½ leagues; the easternmost of these islands is called DUCK KAY.

From Duck Kay to KAY VIVORAS, or VIPER KAY, the distance is about 4 miles. There are three small mangrove islands between. Kay Vivoras is 4½ miles long, with a white sandy beach, and is remarkable for a high hummock of trees at the west end.

From the east end of Vivoras to the west end of OLD MATACUMBE', the distance is 3 miles. Matacumbé is 3 miles long, in a N.E. direction. The trees at the north end are very high, and level at the top, appearing at a distance like level land. It lies in latitude, 34° 49', and longitude 80° 50'. There is a safe harbour near the north end of Matacumbé, where vessels drawing not more than 7 or 8 feet may go in, and anchor in 3 fathoms, secure from all winds; but they must go round the east side of an islet, called INDIAN or MATANZA KAY, keeping about a cable's length off shore, where there are 9 and 10 feet for some distance, and thence 2 and 3 fathoms in a broad channel, which runs round towards the north end of Matacumbé, where there is a large turtle-crawl. The channel plainly shews itself by the white shallow bank on each side, on which there is only 2 or 3 feet of water.*

INDIAN KAY lies about a mile to the eastward of Matacumbé, and it is all shoal between them. To the north-west and northward of Matacumbé, the Mangrove Islands begin again, and continue to the main land, about 6 or 7 leagues distant, and all the way to the eastward within Cayo Largo, &c., but the space is almost one continued flat, with some small channels of 5 or 6 feet of water.

The REEF from Sombrero or Hat Kay is, in general, very broken ground, as far as the west end of Matacumbé, there being many patches of coral rocks with 6 and 8 feet of water, and others, where the rocks rise to the surface, particularly some spots off the east end of Cayo Largo, about 7 or 8 miles off-shore. There are likewise some large patches off the middle of Kay Vivoras, and another large rocky shoal of 8 and 10 feet, off the west end of Matacumbé, at the distance of 4½ miles; but there are channels of at least 3 fathoms, over several parts of the reef between.

There are also some dangerous shoals of coral rocks in the channel, between the Reef and the south-west part of the Vaccas, the largest of which has only 4 feet of water on it, and lies 3½ miles *N.E. true*, from Sombrero, and about a mile and a half from the Vaccas. There are several other small patches of 5 or 6 feet to the N.E. of it; but, in the day-time, all the shoals appear very plainly at a distance, being of a brown colour; and, as it is unsafe running in the night, it is always necessary to come to an anchor, through the whole extent of the channel.

* The best inlet hereabout, over the Florida-Reef, towards the Kays, or into Hawke Channel, lies with Indian or Matanza Kay bearing N.N.W. It is called SPENCER'S INLET, and its least depth, *on this bearing*, is 4½ fathoms.

From the Vaccas Shoals, the channel still continues to be 2 or 2½ miles broad, to the eastward of Matacumbé; 4 fathoms is the deepest water, but 2½ and 3 fathoms is the general depth along Cayo Vivoras, at 2 or 3 miles distance.

WATERING-PLACES.—We have hitherto omitted mentioning where *fresh water* may be found, in order to bring into one point of view so necessary an article, for those who may have the misfortune to be shipwrecked, or otherwise be in want of it.

There is no drinkable water on the Tortugas, nor any where till you come to the west end of Cayo Hueso, now *Kay West*, where there are several wells dug in the sand. The water is pretty good, especially after rain, but sometimes you will find it a little brackish; in which case, the best way is to dig a new well, which is soon done, and you will find the water much better than what has been standing in the old wells.

At Bahia Honda very good fresh water may be obtained in the same manner; and on the south side of the Vaccas, about 7 miles from the west end, there are likewise fresh-water wells on the east side of a narrow opening, with a sandy beach on the east side of it.

These are the only places among the Kays (at least so far as we know) where fresh water is to be got by wells: but there are several fresh-water swamps and natural reservoirs among the rocks, particularly a large one on the north side of the Vaccas, about 6 miles from the west end, where the water never fails. It lies in a valley, about 100 yards from the beach, a little to the northward of three mangrove islands. There is likewise fresh water to be got sometimes among the rocks at the west end of the Cayos Vaccas, and the small islands to the westward of it: besides, at the west end of Duck Kay, and several other places. In general, wherever there is a rocky foundation, there is a chance of finding fresh water, especially after rain.

But the PRINCIPAL WATERING-PLACE is at the north end of Old Matacumbé, where there is a natural well in a rock, about 4 feet deep, which is constantly full of excellent water, being a kind of spring. On this account, Matacumbé is much frequented by the wreckers and turtlers, as there is no fresh water for many leagues to the eastward.

NEW MATACUMBE', EASTWARD.—New Matacumbé lies 2 miles to the north-eastward of Old Matacumbé, and is 3½ miles long, in a N.E. direction. It is covered with thick tall trees. At the N.E. end of it there is an opening, about half a mile wide, with a small mangrove island in the middle; then a mangrove island more than a mile long, which is separated by a narrow channel, from a large island, nearly 6 miles in length, covered with high trees of various kinds. This island has no name given it, either by the Spaniards or the Providence people; yet it is called LONG ISLAND in the Charts, and was formerly included under the general appellation of CAYO LARGO, from which it is separated by a narrow channel.

TAVERNIER KAY, the *Cayo Tabona* of the Spaniards, is an islet one mile from the S.W. end of Cayo Largo, and 5 leagues N.E. from Old Matacumbé. There is a very good anchorage, a little to the northward of it, for such vessels as frequent the coast, and which is much frequented by the fishermen.

CAYO RODRIGUEZ, or *Melchior Rodriguez*, a pretty large mangrove island, without any firm ground, (the roots of the trees being constantly overflowed,) likewise lies off Cayo Largo, at the distance of 4 miles N.E. by N. from Tavernier; it is in latitude 25° 0′, and longitude 80° 34′. From hence the coast of Cayo Largo, which here appears like main land, turns quickly to N.N.E. and N. by E.

There are no shoals on the reef opposite to Old Matacumbé, except that off the S.W. end, already mentioned: there is a large patch of coral rocks, bearing E.S.E. 4 or 5 miles from the north end of Old Matacumbé, on which there is, in one part, only 2 feet of water. The reef comes within less than 3 miles of Rodriguez, where you have only 7 or 8 feet of water; and 3 fathoms is generally the deepest water in the channel all along.

From the large shoal of Rodriguez, which forms a kind of elbow, the patches of coral rocks are said to increase in number and dimension, forming double and treble reefs, with small channels of deep water through them; but they are imperfectly known.

Within Rodriguez Kay, on the west, lies a very small kay, called CAYO DE PALUMBAS, or DOVE KAY; it is gravelly, and of moderate height. In the wet season, it affords good fresh water. Doves are found on this kay, and purslain grows upon it.

CAYO

CAYO LARGO, &c.—The easternmost part of Cayo Largo is called SOUND POINT, opposite to which and to the Kay of Rodriguez is the GREAT INLET of the Florida Reef. The indraught which sets into this place renders a too near approach very dangerous, especially with a light or on-shore wind.

From the Great Inlet the *Carysfort* or *Outer Reef* extends to the N.N.E. 16 leagues, forming within it the *Hawke Channel*. Near the northern entrance of the latter is the lighthouse on Biscayno Kay, described in page 138. Near an elbow of the reef, about 4½ leagues from the Great Inlet, is moored the *Light-ship Florida*, in latitude 25° 8′, longitude 80° 14′, or nearly so. It was placed here in November, 1830. The vessel has two lights, one higher than the other. She has, also, a large heavy bell, which, in thick weather, is struck every half hour, as a warning to those approaching. The lights (50 and 60 feet high) can generally be seen at the distance of 12 miles off.

From the north end of Cayo Largo commences a range of islets and kays, that terminate at the point commonly, but improperly, called CAPE FLORIDA. The most remarkable among these is the small kay called the PAPS, from the hillocks upon it, and CAYO BISCAYNO, the last of the Florida Kays, which lies to the southward of the Cape, and about two leagues west from the Fowey Rocks, which are the first dry spot on, and the termination of, the reefs.

At the south end of Biscayno Kay, very good water may be obtained by digging; provided the land does not cover clay; for wherever clay appears on the beach the labour would be fruitless. But sometimes, in the dry season, wells will yield no water; but then the watering-places on the main, at 8 or 10 miles from the kay, may be depended upon.

FURTHER DESCRIPTION *of the* MARTYRS *and* FLORIDA REEFS, *with* DIRECTIONS *for* SAILING *from the* EASTWARD, *through* Hawke Channel.

HAWKE CHANNEL.—BISCAYNO KAY, in latitude 25° 41′, lies within the northern entrance of Hawke Channel, or the Channel within the Florida Reef, as already noticed, on page 138. For about five leagues north of the kay, the ground is very foul, and looks frightful, but there is no where less than 3 fathoms; though, by keeping out, 5 or 6 miles from the shore, you will find generally 5 or 6 fathoms, fine sandy bottom; and, when you approach the reef, you may haul in, observing to leave it a large piece without you; for it has many bad sand-bars just on its inner edge. You will not find less than 3 fathoms any where within, till you come abreast the south end of the kay, where there is a small bank of 11 feet only; but be careful to give the kay a good berth, as a large flat stretches from it.

To the southward of Biscayno, about 5 miles, lies *Oswald Kays*, two low spots of mangrove on a bank, and inaccessible to any thing but a boat. The next kays are those called *Lawrence*, *Paradisos*, *Knox*, *Pollock*, and then the *Soldier's Kays*, named *Mascaras* by the Spaniards, which are seven rocks just above water, with some mangrove and blackwood bushes on them: their trenching is nearly to S.S.W. Next to them is a little island, on which are two small hills, whence the Spaniards have called it *Las Tetus*, or The Paps. The inlet to the south of it has the name of Saunder's Cut, where a small vessel, drawing about 4 feet, may enter into the wide sound, between these kays and the watering-places on the main.

About 6 miles S.S.W. of this, is an inlet called *Black Cæsar's Creek*, which will likewise admit small craft into the inner sound: this is made by the south end of Elliot's Kay, on the south part of which the snow Ledbury, commanded by John Lorain, was cast away in September, 1769, where at last it was burnt, after a vast deal of trouble and expense to get her off. Such an inundation had then happened, that it covered the tops of the highest trees on Kay Largo, Rodriguez, &c. with 3 feet of water. By the current of the stream, caused by a N.E. gale, the snow was forced over the reef, in a shallow sea, bilged, and coming to an anchor, found herself next day on shore upon Elliot's Kay, with her anchor among the trees.

Next to Black Cæsar's Creek, is Jennings' Kay, with two small kays at its south end, forming an inlet known by the name of Angel Fish Creek. From this inlet to Sound Point, the course is nearly S. by W., and the distance 4 leagues. Sound Point, as already noticed, is the south-eastern part of Kay Largo.

The

The general rule for sailing within the reef, from the Soldier's Kay to the southward, is, to have a careful man at the mast-head, to look-out: he will see all the heads and other shoals a good way off, in a clear day, at least a mile; thus making the eye your pilot, come no nearer to the Soldiers than 12 feet, and no farther East from them than 18 feet. About E.S.E. a mile outside of Saunders' Cut, lies a small round bank, with only 9 feet on it; from this place to Black Cæsar's Creek, the sunken heads are very frequent, and the bar of that creek reaches a great way out. Right abreast of the spot, and north of the bar, is a very fine anchorage in 22 feet, close to the back of this reef, which makes the inlet. On the point of this reef are the remains of the ship Hubbard, cast away in 1772.

The bottom of Black Cæsar's Creek is sand; but, from thence to the south-westward, it gradually changes into a kind of soft marl, of the consistence of dough. When you are clear of Angel Fish Creek to the south, the same rule of keeping within 18 or 12 feet depth for the channel is to be observed; but, after all, a careful inspection of the Chart, together with a comparison of it with the course of the land you sail by, and especially a good look-out, will constitute you a better pilot than any directions that can be given.

SOUND POINT is the only spot that may be said to form a true promontory, from the Spring in the Rock, in latitude 26° 42′. Mr. Gauld says, it is off Sound Point, that is, on the extensive reef that lies before it, that almost every vessel cast away has met her fate. The people, who watch the misfortunes of navigators, to make a benefit by them, know so well how much ships are exposed in approaching this reef, that, during the summer months, the season for the return of the Jamaica fleets, they station themselves at anchor a little south of the point, from whence they can with certainty wait for the sight of any ship that is unhappy enough to be drove on shore on this reef. It is called *Carysfort Reef*, from his Majesty's ship of that name having been run there by the pilot, the 23d of October, 1770: she was brought off by the skill and diligence of the Master, Mr. Hunter, and is the first vessel which got clear.*

From the north end of Sound Point to Rodriguez Kay, the course and distance are S.W. 9 miles. There is a good harbour for small craft on the N.W. part of the Kay, made by a reef running off from its N.E. end, and another good sheltering place to the S.W. of it, but neither has a greater depth than 9 feet at low water. Tabona, or Tavernier's Kay, is a large thicket of mangroves, without a foot of dry soil on it, and affords only some aquatic birds and their eggs.

Between the South Point of Kay Largo and Tabona is a sheltering-place, or roadstead, for small vessels, within a ridge or reef, on which are generally seen some turtle-crawls; but it is seldom occupied, except by timber-cutters. Kay Largo affords in this place, lignum vitæ, mastic, and mahogany; the two last are indeed found on every part thereof, but on none of the kays north of the Paps, nor on none to the south of the last kay north of New Matacumbè; all these timbers, however, are nearly cut off.

Kay Largo affords no living creature, except racoons and insects, especially those troublesome ones, mosquitos and scorpions.

In going southward from Sound Point, observe the rule already given, keeping within 18, and without 12, feet. The channel here is pretty wide; but a man must be kept at mast-head, to discover heads, as some rocks lie in this tract, especially near Tabona or Tavernier Kay. This island, wherein is a small harbour within a reef, like that on Rodriguez, has little or no high ground, and affords land-crabs, some few doves, and other birds. One mile to the west of it, at the south point of Kay Largo, is a creek scarcely a musket-shot wide, admitting only boats, and called by the Spaniards Boca Herrera. The bay within abounds with red drum, and some other fish, with green and loggerhead turtle; lobsters, likewise, are abundant between Sound Point and this creek.

From the south-west part of Kay Largo, to the island called New Matacumbé, the

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* Where the Carysfort ran on shore, the reef was found uneven: in some places, three and four fathoms of water separated some of the patches; upon one of the last, a ship loaded with mahogany had run aground, the same night with the Carysfort, but three miles without her. It being low water when the merchant-vessel run on the patch, by lightening her, she got off at high water. The tide here ebbs and flows regularly.

It may be proper to remind the reader, that these observations were written above forty years ago.—EDIT.

course

course is S.W. about 8 miles; you pass by Long Island with the little kay at its south end. New Matacumbé has nothing remarkable, except a well of good fresh water on the east end; but that being known to few, the island is little frequented. Off its S.W. end lies a small drowned mangrove island, called Umbrella Kay; a channel 10 feet deep runs in to the south of it, and shoots up to within the larger island; but there being nothing worthy of notice on this kay, it is very seldom visited.

In coming this way from the north-eastward, the channel is in general deeper than before; but the same rule of keeping without 12, and within 18, feet, still holds good. Observe that, directly abreast of New Matacumbé, in one mile and a half East from the land, are a groupe of dangerous sunken heads, called the Hen and Chicken, which require a good look-out.

Next to the S.W. is the island of *Old Matacumbé*, remarkable for being the most convenient and the best watering-place on all this coast. On its east end are several wells in the solid rock, which appear to be natural chasms: they yield excellent water in abundance, and some ponds near them likewise afford some; insomuch that, in a wet season, all the east end of the kay is overflown, and water enough is to be had to supply a whole fleet. At the west end are likewise some ponds and wells, but the water is of a much inferior quality. This island was one of the last habitations of the Indians of the Coloosa nation. About a mile from its N.E. end, lies the small bushy gravelly kay, on the extremity of a reef, called Matanza or Indian Kay. The latter is the leading mark for finding the watering-place on Matacumbé. The channel to the south of New Matacumbé is so plain, that the best direction is your eye. Observe that, the tides, being very rapid, require to be attended to, both in coming in or going out; and that the channel is very narrow, having only just room enough for a small vessel to turn to windward.

From the S.W. end of Old Matacumbé to the west end of *Vivoras*, or Viper Kay, the course is S.W. about 7 miles, and the depth of water 17 or 18 feet, sandy bottom: you must be careful to give the Vivoras a berth of at least a mile and a half.

From Vivoras S.W. by W. 12 miles, brings you to the contraction of Hawke Channel, between the outer reef and the Vaccas: your depth is generally 18 feet; the bottom is sandy, and a broad bank runs off from the Vaccas.

At this contraction of the channel, the course must be changed to W.S.W., going through the like draught of water for 5 miles.

The next islands are called the Kays of *Bahia Honda*, extending E.N.E. and W.S.W. 6 or 7 miles. Hence to the island called by the Spaniards Cayo Hueso (now Kay West) the course is W.S.W. ½ W.; the depth of water from 17 to 23 feet. The kay extends about East and West 6 miles, having a shallow bank before it; its west end has also a ledge of rocks close to it on the south, and the point is in a low kind of Savanna, near which is a well of very ordinary water. All these kays abound in water, have plenty of venison, and in some of them honey is found.*

TIDES.—The tide ebbs and flows here regularly 6 feet, and the time of full sea, at full and change of the moon, is eight o'clock, as it is every where from the Vaccas to the Dry Tortugas; the tides setting as is shown by the darts in the Chart. The tides from the Vaccas north-eastward rise not quite so high; and the time of full sea is from seven to eight o'clock, being later as you come westward. To the northward of Kay Biscayno, the current on soundings is much governed by the wind; but when the wind has little influence, the ebb sets north, and the flood southward: a due attention to this will much shorten a passage over soundings to the reef.

In August, 1766, Mr. Romans, on his route from the Havanna, was becalmed, in foggy weather, near the Tortugas, and was drifted by the flood-tide over a coral bank,

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* In favorable weather it has been common for small vessels from the northward, and bound into the Mexican Sea, to take advantage of the *counter-current*, which sets over soundings near the Florida Reef, to the south-westward and westward, excepting when the wind is at North or West. The rule is, to keep in the coloured water by day and off to the Stream by night. To do this with advantage, a land-fall should be made early in the morning, in order to have, throughout the day, advantage of the eddy. The safest way, however, is, with light and westerly winds, to make the *Double Headed-shot Kays* and the coast of *Cuba*, where you are likely to find but little current, and may have the advantage of the land-breezes from that island.

See, upon this subject the '*Remarks on Sailing along the Martyrs by Mr. Romans*,' hereafter.

soon

soon after which the ship struck. He says, "The two following days we were employed in looking for a passage out, through which, on the morning of the third day, we warped out to the east. It was on the following day, the full moon in August, when we struck; we observed the tide to rise and fall full 6 feet, and the place where we struck at first to have between 6 and 7 feet of water on it, when the tide was out; it being nine o'clock when it began to ebb: I then fixed the full sea at about eight o'clock on the full or change, or a S.E. by E. ¼ E. moon."

General Remarks on the Martyrs Reef, Inlets, and Islands.

The REEF.—There are eight openings into the reef: they are safe communications with the Florida Stream, having no less than 18 feet of water, and being very plainly laid down in the Chart. If you keep a boat on the reef, it will always point out those entrances in such a manner, that you should be able to enter safely any one of them in moderate weather, when want of water, contrary wind, or any thing else, renders this shelter necessary. Two of these inlets, however, require a little more to be said of them; those are *Great Inlet* and *Spencer's Inlet*.

The first, in 24° 59′ latitude, has a knoll of dry rocks above water on the S.E. point of the reef, directly on the edge of the channel, whereby it is easily known; the second, or *Spencer's*, which is in 24° 45½′, opposite to Old Matacumbé, and above 6 miles broad, has no such visible marks; but the eye will guide you for both, especially for Great Inlet, where the land may also help a little, as the two small mangrove kays, Tabona and Rodriguez, shew themselves plainly enough in the west; for the rest, all the land appears so much alike, that it requires years of experience to know it. The soundings in are as marked in the Chart; and, to any person who knows that, in a gale, by reason of reverting current, anchoring is full as safe under a reef as under land, we need not enlarge much about the utility and knowledge of these channels, much less to a man who is either in want of water, or who, upon falling in with these shoals, and thinks himself in danger, has courage enough not to despair.

The MARTYRS.—The *Martyrs Islands* may be divided into two classes, the *High Islands*, and the *Low* or *Drowned Islands*. The High Islands are grounded upon rocks, some gray, some white, and some black and hard as flint; and the Low, viz. Mangrove Islands, are founded on coral rocks, all covered with a rich but wet soil. The High Islands are covered in places with sand, on which little or nothing grows; in other parts they have a stratum of bluish marl, on which flourish, in great abundance, and in a most agreeable temperature, torch, madeira, lignum-vitæ, iron-wood, sapadilla, manchineel, wild cinnamon, gum-elemi, papa, popagos, the white, red, and black, mangrove, cotton, and grape-tree, grape-vine, the ycaco-plum, aloes, opuntia, squilla, &c. None of the islands, Hueso or Kay West excepted, are inhabited, but they are (or formerly *were*) visited by the English from New Providence, and the Spaniards from Cuba, for the sake of wrecks, Madeira wood, turtle, &c.

The quantity of fish and turtle, viz. the logger-head, hawksbill, and green, to be caught in and near these islands, is almost incredible; which, joined to the many watering-places, with the plenty of venison and bear-meat, makes them a desirable rendezvous for cruisers in time of war. Spars may be had here at all times, either out of the pine-woods, back of the islands, or among the drift on the beaches, which is no small enhancement of the value of these islands to cruisers; for they are often in want of them, or, at least, are more liable to such losses than merchantmen.

The fish round the Martyrs are in such variety, that a bare catalogue of them would take up pages: out of the most remarkable is a species of prawn, growing to the weight of five pounds a piece, which live in great numbers in the holes of the coral rocks, on the mangrove islands; these prawns are by the West-Indians improperly called lobsters, although they have not the two claws, as lobsters; they are beautifully spotted with red, yellow, blue, green, gray, and a little black, but all change into one red colour by boiling.

The fish most commonly caught are such as seamen know by the following names, viz. king-fish, barracoota, tarpom, bonita, cavollos, amber fish, pampus, silver-fish, jew-fish, rock-fish, groopers, porgys, Margate-fish, French Margate-fish, hog-fish, angel-fish, yellow-tails, red, gray, and black, snappers, dog-snappers, mutton-fish, grunts, maurenas,

or

or muray, mullets, sprats, mangrove snappers, parrot-fish, red and black drum, bone-fish, stingrys, and an immense variety of others, all excellent in their kinds: and what renders this plenty of more worth is, that you may with safety eat of all fish caught on the Florida shore, unless it should be of hog-fish, taken on the very outer reef; for there are instances of one of this kind having sickened some people, though several others have always eaten that delicate fish with safety; and even the amber-fish and yellow-billed sprats. The worst kind, in places where fish are poisonous, is here always eaten with safety. On the contrary, it is requisite on the Bahama Banks, to be cautious what fish you eat before trying, which is most conveniently done by cutting the heart out of the fish so soon as caught, and to bite it in; when, if the fish be bad, it will have a very nauseous, bitter, astringent, taste on the tongue; but, if good, no such taste will be perceived. The method of boiling silver with the fish is not so certainly to be depended on.

Remarks on Sailing along the Martyrs, by Mr. Romans.

"During my several cruises within the Martyrs or Florida Reef, I have seen a great number of vessels borrow so close on the reef, as that they appeared to be within it; and sometimes I could even see the people with the help of a glass: those people, I suppose, were well acquainted, or very bold; but let the man who does this be ever so experienced, he must be very careful to keep a strict look-out; for my part, I would not come nearer than just to raise the land, especially as tides may have their influence further off than we are aware of.

"Besides this reason for standing longer off than in, there is one still greater. Every experienced mariner knows that a vessel will run towards the shore in less time than she can run the same distance from it; and that the higher the land she works under, the quicker she runs in, consequently the slower she runs off. Hence, almost every one, in bearing upon a lee-shore, will stand out a longer time than in; but few, even among the most experienced, know the philosophy of this phenomenon against which they guard so carefully. It is that great law of nature, whereby all light bodies must fall on the heavier ones—I mean, attraction. To explain this by an experiment; take any vessel, fill it almost with water, put a cork or chip in it, while that remains in the centre, it is attracted from every side alike, and therefore stands fixed; but no sooner is it thrown out of the centre, than it will begin to approach the side; and, as it draws near, attraction is increased, till at last the velocity of the chip becomes so great as to run with considerable violence against the vessel, where it remains fixed; and, if it is an oblong piece, in shape of a vessel, the same will happen as when a ship runs ashore stern-on, viz. it will wind broadside-to. The explanation of this phenomenon we owe to John Collins, Esq. of Newport, in Rhode Island, formerly first counsellor of the state, and a very experienced commander.

"By the N.E. current which prevails here we are enabled better to avoid the imminent dangers of the reef, where it becomes a lee-shore; for the violence of the easterly gales beats the Gulf-water over the reef, so as to destroy the effect of flood-tides, by causing a constant reverberating current from the shore over the reef, insomuch that a vessel riding under the reef will lay with her stern to windward.

"I once came out from Matacumbé, and was scarcely clear of the reef, before I was overtaken by a gale from the eastward, which was very violent. It was five o'clock in the evening, and it being dark, to attempt a re-entrance of the reef, I was forced to heave the vessel to, which I did under the balanced mainsail: she was a heavy schooner of about seventy tons, and a dull sailer. The succeeding night I passed in the deepest distress of mind, seeing the burning of the breakers, in constant succession on the reef, till past one o'clock: the storm continued till ten next morning, when I made sail to the northward, and at noon, to my utter astonishment, I had an observation of the sun's altitude, which proved me to be in 26° 50′ latitude, by which I had made a difference of latitude of 118 miles in the short space of nineteen hours, seventeen of which I lay-to.* (Therefore more than six miles an hour.)

* In December 1822, the Florida or Gulf Stream then running weakly, the counter current was found, running with considerable strength, at 12 or 15 miles from the Florida shore.—*Journal of H.M.S. Niemen.*

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"I am an utter enemy (pursues Mr. Romans) to all theoretic and systematic positions. My experimental position of the cause of this increase of the velocity of this current during the gales that blow contrary to its direction, is no other than the reverberating current occasioned by the swelling of the water within the reef, which, (as we have already mentioned,) in the memorable gale of October, 1769, when the Ledbury was lost, was no less than thirty feet above its ordinary level."

We have already shown, in the Introductory part of this volume, the general nature of the GULF-STREAM, and we shall hereafter, in the second part of the work, give the particular directions for sailing through it, from Jamaica, &c.; but here it may not be amiss to notice, by way of illustration, from the information of our friend, *Lieut. Evans*, that, in the month of July, 1813, the fleet of merchant-vessels, from Jamaica, under convoy in the Strait, from the 9th to the 14th, after passing the Double-headed-shot Kays, was becalmed, and *the current swept the whole through the Strait by its strength alone.* By calculation it appeared to have run 60 miles in the 24 hours; or 2½ knots an hour. On the 15th the convoy was on the parallel of 27° North with a fresh W.S.W. breeze: current N.N.E. The following year circumstances precisely similar occurred, in the same season; and the fleet was carried through the Strait *without a breath of wind.*

6.—GENERAL DIRECTIONS FOR NAVIGATING THE MEXICAN SEA, OR GULF OF MEXICO.

[*From the Derrotero de las Antillas.*]

HAVING described the whole of the coasts, and treated particularly on the mode of navigation upon the Bank or Soundings of Campeché, and on that for making the ports of New Orleans, Mobile, Pensacola, &c., we now proceed with the general directions for sailing from one place to another through the Mexican Sea.

The routes made from windward to leeward, or with a free wind, require no specific rules; for it is sufficient to ascertain the direction by the Chart, taking care, solely, to keep so far to windward of the port of destination as to compensate for any error which may be in the reckoning, and considering the difficulty there would be in getting back in the event of having passed it. Thus all who, from the Channel of Yucatan, or that between Cape Catoche and Cuba, or from the Strait of Florida between Cuba and Florida, are bound to any part of the Gulf of Mexico, be it Campeché, Vera-Cruz, Tampico, San Bernardo, New Orleans, Mobile, or Pensacola, have no more to do than to shape a course for the port; allowing, in all cases, for the effect of current, and taking care not to get upon the Tortugas, instead of being to the west of them.

Considering that the PORT of VERA-CRUZ is far to leeward, we shall here add the mode of navigating *from it*, and coming out, both by the Channel of Yucatan, towards the Caribbean Sea, and by the Strait of Florida towards the ocean.

In order to this, remember, first, that the winds, in the Mexican Sea, are, generally, from the eastward; that, from October, the easterly winds are interrupted by the hard NORTHS, which often blow; that, after the Norths cease, which is from March, you may count upon the regular changes of land and sea-breezes, along the whole of the coasts, and especially on those of Yucatan and Campeché; and, finally, that, on the north coast of the Gulf, in the months of August and September, there are frequently furious hurricanes, which descend as far as latitude 26°, or even sometimes to 25°.

ON DEPARTING FROM VERA-CRUZ, in the season of the Norths, you should first steer North, or N.N.E., but taking care never to keep very close-hauled: this is enjoined, that you may, so soon as possible, gain the parallel of 25°, on which you may keep as close to the wind as you can, for the purpose of gaining longitude; for, in such a case, you not only avoid all danger of getting entangled with the Tabasco coast, in the south, in case of a North coming on, but you may also run to the east, without danger from the *Negrillo*, or other shoals, on the Bank of Campeché. This plan is the most judicious, because the first thing is to get well clear of the Bight of Vera-Cruz, wherein, if caught by a North, you must carry sail to it, in order to avoid being driven on the coast to

to the south, in which you might, very probably, get shipwrecked by a continuance of the wind; and, besides, it is of importance to be in such a situation, when a North sets in, as allows you to take advantage of it, for running to the east, and thus to shorten your passage.

In the months when the Norths are weaker, you may calculate that one of them will facilitate your passage to the Tortugas soundings, and will have only to gain all you can to the east, after you have gained the parallel of 25°, by beating up in that latitude; for, in this season, (part of March, until the end of April,) it will be little adviseable to run up into the vicinity of the north coast, upon which the E.S.E. and South winds blow with much force, before a North comes on. With the North you must haul up for the Tortugas Bank, which you should not leave, in order to make the shore of Cuba, either with light winds or Norths; in the first case, because the current may carry the vessel up the Strait of Florida, or even through it; and, in the second, because the Cuba shore is generally much obscured by such winds, which are, in general, not very manageable; and you may, therefore, get so entangled on the coast, as ultimately may cause you to be wrecked. If not bound to Havanna, but directly through the Strait of Florida, with a light wind, you may leave the soundings, and proceed according to circumstances, or, rather, as hereafter directed.*

The course for running across to the coast of Cuba must be such as to compensate the effect of the current: in general, to make Havanna, it is sufficient to steer S. by E. ½ E. [*S. by E.*] if the vessel does not run more than 3 miles an hour, and S.S.E. [*S.S.E. 5° E.*] if she run 6 miles an hour: this is counting upon two miles, hourly, of current, which is what we may generally expect in this place. If the vessel runs more than 3 miles, but less than 6, you can shape a course between the two above stated; or, if she goes more than 6 miles, you may luff to S.E. by S. [*S.E. ½ S.*]

If you sail from Vera-Cruz between the end of March, and the middle or end of June, you need not then keep close-hauled to the breeze, nor exert yourself to gain to the eastward, when you have reached the parallel of 25°: for, with this route, you would be crossing the middle of the Gulf, where you would then find fixed winds from the eastward only, and many calms, which lengthen the navigation much; what at this season ought to be done, is, to steer always to the North or N.N.E., keeping the breeze well free, until you get into the vicinity of the northern coast, when you may advance to the eastward, about the parallel of 28° or 29°, with the assistance of the variations of the sea and land-breezes, until you get on the Tortugas soundings, when you may run to the south, in order to run off the bank to the west of the Tortugas. At this season, also, you may run for the Campeché Bank, in order to get to windward of it by the aid of the changes of the sea-breeze and land-breeze, until you gain the eastern edge of it, when you may steer for the coast of Cuba, taking care to quit the edge of the bank as far to the south as you can, with the vessel's head to the S.E. in preference to the N.E., unless the latter should be very advantageous; for you will thus shun the current, which, on the N.E. portion of this bank, sets with considerable force towards the N.W.; then, advancing to the east, and next taking the other tack, follow the latter to get into the general current, which runs to the eastward, between Cuba and Florida.

Finally, between the middle or end of June and the month of October, you ought to shun the middle of the Gulf, because you would there be exposed to calms and contrary winds; and, at the same time, avoid the northern coast, on account of the hurricanes; and you ought then, therefore, to take the route by the Campeché Bank.

To go from Vera-Cruz to Campeche', if it be in the time of the Norths, you must endeavour to gain the parallel of 21°, and beat to windward by it, to get on the Bank, either to the northward or southward of the *Arcas*, as we have already shown in page 152; and, if a North comes on, while you are in this part, by steering the same, it will enable you to make your passage in less time; but, in the summer-season, having once

* Six miles to the westward of the Dry Tortugas lies the centre of the Tortugas Bank, already noticed in page 205. Although, from the clearness of the water on this bank, it appears dangerous, it is not so in reality. The extent of the bank is 9 miles from North to South, and 6 from East to West. If, when bound to the eastward, from any port in the Mexican Sea, and you meet with a fierce storm about this part, which is very common in the summer-season, you may safely anchor in 5 or 6 fathoms, to the north of the S.W. Kay, at the distance of one-quarter of a mile from the west side of the long sandy kay, called *Turtle Kay*.

cleared the *Outer Shoals of Vera-Cruz*, you may keep along the coast of Tabasco, availing yourself of the changes of the sea-breeze and land-breeze to get to windward.

We shall conclude by saying that, when bound to Vera-Cruz, in the time of the Norths, in case that wind should take you on the Campeché Bank, you should so arrange, that, calculating on the time the North may probably last, which you may do by its greater or less violence, you may make the coast when the North has ceased; availing yourself of the favourable conjuncture for taking the harbour when the breeze is established.

[*For a route from Vera-Cruz to Havanna, by Lieut. Evans*, see page 173.]

RIVER MISSISIPI to the STRAIT of FLORIDA.—To the directions for returning from the Missisipi, given in page 190, the following may be added. In proceeding from the Missisipi, in the season between the months of October and March, when the Norths are prevalent, the best way is to keep well to the eastward, or about E. by S. The winds blowing mostly between E.N.E. and N.E. Proceed thus, if you can, until you gain soundings on the great bank, and hence you may make a free wind all the way to the Tortugas. In the other seasons of the year, you may make a direct course for the Tortugas, but will certainly have some beating to get to them. By keeping along near the edge of soundings, you will have the current in your favour, and may double the Tortugas at 3 or 4 miles off. Here you will have the lighthouse on Bush Kay in sight (see page 205), and here, by day-light, the proximity of the reef will clearly manifest itself by the colour of the water, while the current or *Gulf-stream* will be found, setting to the eastward, along the edge of, and bounded by, the edge of soundings.

PASSAGE FROM MOBILE.—Having given, in a foregoing page (195) a description of the weather at Mobile, in the month of *February*, we subjoin the remarks of Captain Bowden, on his subsequent passage. The *Gorgon* weighed, as already noticed, at the Bar of Mobile, for Havanna, with the wind blowing strong from the N.E. Feb. 23, 1815.

"The N.E. wind left me at about nine leagues from the land, where I fell into variable winds from the southward, and a strong swell setting to the S.E. About 20 leagues to the S.E. of Mobile I met strong winds, and heavy white squalls, from the East and S.E., that obliged me to stand to the southward and westward; a considerable sea rose with the wind: here I met a strong current setting me to the S.W. and W.S.W. After standing thirty-six hours to the S.W. the wind veered to the southward, and baffled about from S.E. to S.W., with very heavy squalls, dark full-charged atmosphere, with thunder, lightning, and rain, until I had opened the Gulf-stream, when the wind veered to the N.E. and blew fresh, with clear weather.

"The prevalence of southerly winds prevented me from striking soundings more than once on the Florida Bank. I was very anxious to strike the ground on the Tortugas, but could not effect it from the winds. They are, however, as well as all the soundings in the Gulf of Mexico, a safe and good guide; and ships bound out of the Gulf should keep in soundings, where they will be aided by the easterly current. Throughout the Gulf I met more or less of the sea-weed, which is said to be in the Gulf-stream, where I found less than here."

In passing from the Mexican Sea, on opening the Strait of Florida, the Gorgon met a fresh of wind from the E.N.E. with current setting against it, according to its usual course.

APPENDIX.

Some additional Remarks on the Passages of Ships to and from New Brunswick, &c.

Having incidentally given, in page 85, a note (*) by Captain Hare, on the propriety of keeping a southern parallel, when returning from New Brunswick, Nova-Scotia, &c. we now enforce the caution by adding, from the pen of an intelligent writer, the following apposite and conclusive remarks, which were given, under the signature of *Atlantica*, in the *Nautical Magazine*, June, 1833. To these we have appended an affecting description of losses by the ices, in the month of May, same year, as given in the '*Times*' of June 10.

"Although the voyage to and from North America, between the parallels of 60° and 40°, has always been attended with a degree of peril, from masses of ice which drift to the southward, during the summer months, from the polar regions, yet many an unwary mariner makes his run across the Atlantic without any apprehension of meeting these floating dangers, or without sufficiently exercising a proper discretion and vigilance to guard against coming in collision with them. This is not mere conjecture, but the information of persons who annually perform the voyage, besides the result of my own observation, in accidents which have repeatedly occurred to vessels between Newfoundland and England, and in the number of missing ships on this route. Commanders of ships should therefore bear in mind the imperative necessity there is for using their utmost vigilance and attention when crossing the above-named parallels, especially between the meridians of 30° and 60° West, to guard against coming in contact with these formidable dangers of the ocean.

"The *New York packet ships*, well supplied with every essential equipment, and elegantly fitted for the accommodation of passengers, when making their winter voyage from Liverpool, keep in high latitudes until nearing Newfoundland.* This they do for the two-fold object of avoiding the tempestuous weather so generally experienced to the southward, and of obtaining fairer winds; and thus, by slipping within the mighty stream from the Florida Channel, they evade its retarding influence. The voyage by this route is shortened; and, although bad weather must be expected, it is not so violent as farther south; besides which the eastern current is avoided. I believe it is an unusual thing to meet with ice in this part of the Atlantic in the winter; but we have the following recent instance to the contrary, so that a look-out should be kept in that season, as well as in the summer, by vessels making the voyage.

"It appears that the *Emulous* packet, on the 26th of February, 1833, met with much field ice on the coast of Nova-Scotia; and in the latitude of 43° N. and long. 49° W. those on board were much surprised by falling in with a large quantity of strongly *packed ice*, which reduced the vessel's way to 6½ and 7 knots, from sailing at the rate of nine knots, under close-reefed main-topsail and reefed foresail. On the 4th of March, she fell in with three bergs, of large dimensions, in a run of 95 miles; and at nine the same evening she was obliged to pass between the two easternmost of these before heaving-to for the night; after which, by keeping a more northerly course, no more of these dangerous floating masses were seen.

"From all accounts it seems that the greatest danger is to be apprehended in the vicinity of the Banks of Newfoundland; and this, as every navigator knows, is increased by a dense fog which generally pervades the atmosphere in that quarter, and, of course, shortens the distance of vision to a very circumscribed limit.

"Vessels bound to Halifax have the additional risk of stumbling upon that gigantic sand bank, *Sable Island*. Several vessels have thereon terminated their voyages. The

* This practice was, we believe, first recommended by our friend Captain Hare, as shown in the *Atlantic Memoir*, pages 167, 8, 9. Captain Hare crossed the Atlantic, for the 83rd time, in the spring of 1833.—Editor.

establish-

establishment which has been formed there for the relief of ship-wrecked mariners is creditable to the humanity of the Colonial Assembly of Nova-Scotia; but such can only mitigate, not prevent, the evil. That the mother country does not cause a lighthouse to be erected on some convenient point of the island, is not only surprising, but greatly to be regretted.* Why not make a second Ascension of it? Surely, in a circuit of thirty miles, some sort of productive soil might be found, besides sand; at least where the juniper, blueberry, vetch, and grass, thrive, it might be possible to grow culinary vegetables, and to rear stock. It has fresh water ponds, and the sand hills [as shown in page 14] are elevated 140 feet above the level of the sea. The establishment of a lighthouse on Sable Island is well worthy of the consideration of our Colonial Government."

The Second Article above mentioned, is that which follows:—

"The *Lima*, Captain Mardon, sailed from Newfoundland on the 11th of May. On the morning of the 13th of May, in latitude 46° 20′, longitude 45° 50′, when about 400 miles from Newfoundland, being completely surrounded with ice, their attention was aroused by hearing a gun fired, shortly after which they descried a boat at some distance. The Captain instantly hove to, till the latter came alongside, when he took the individuals in her on board. They reported themselves to be the second mate and twelve of the crew of the *Harvest Home*, Captain Hall, of Newcastle, from London, for Miramichi. They informed Captain Mardon, that, on the 9th of May, the Harvest Home was struck by a piece of ice, which stove in her bows. All hands were immediately put to the pumps, by which means they succeeded in keeping the vessel afloat for two days, at the expiration of which time the second mate and twelve of the crew quitted her in the long-boat, the captain and first mate having come to a determination of remaining on board. After they had been out one night, being loth to leave the latter in such a perilous situation, they returned to the vessel and requested the captain and mate to leave her, but they persisted in their determination, saying, "That they would stick to her while a timber remained afloat." They had, however, got the jolly-boat ready in case the danger should become imminent. The crew having again pushed off, they became bewildered amongst the masses of ice by which they were surrounded, and totally uncertain what course to steer. On the next day they again fell in with their own vessel, which they had mistaken for another sail. This time they found that the captain and mate had left her. Two of the crew now went on board; and while they were busy, endeavouring to get more water and provisions, they were surprised at the sight of a boat, containing about thirty individuals, approaching in an opposite direction; they immediately boarded the vessel, having, as subsequently appeared, done so in the hope of succour. They proved to be the captain and crew, and part of the passengers (including two females) of the *Lady of the Lake*, of Aberdeen, bound from Belfast for Quebec, with upwards of two hundred passengers on board. Those who had boarded the wreck of the Harvest Home, when they saw the state she was in, with her hold full of water, made a simultaneous rush to return to the boat, which was at the moment pushed off, and several of them were precipitated into the water. One of them, however, was fortunate enough to make good his leap into the boat which contained the crew of the Harvest Home, and he has now arrived in Liverpool, in the Lima. He states, that the Lady of the Lake struck upon the ice, and immediately filled, when the captain and crew took to the boat, leaving the sinking vessel crowded with the remainder of the despairing and shrieking passengers, to the number of one hundred and sixty or one hundred and seventy. The crew of the Harvest Home state, that after they left their vessel the last time, they saw nothing more of the other boat. Several of the individuals who had fallen into the sea when the latter was pushed off were drowning, but it was impossible to render them any assistance."

For other and similar instances, see our *Atlantic Memoir*, pages 291 to 294, (6th Edit.) and particularly the Remarks by Lieut. Evans, on the page last mentioned.

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* See pages 14, 15, of the present work. Many years ago we pointed out, on our map of the Canadian provinces, the necessity of a lighthouse on Sable Island. The only objection can be that fogs so frequently prevail there.—EDITOR.

END OF VOLUME I.

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